CHROMOSOME NUMBERS IN ANGIOSPERMS II

BY

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With so large a number of workers in many countries reporting on chromosomal studies of many species and varieties of plants it has become desirable to collect the results of their investigations in a uniform way and at regular intervals.

The present list of chromosome numbers has been prepared to supplement a previous one (GAISER, 1926) with the results of investigations reported between 1925 and the end of the year 1928. In order that it might be an adequate supplement at the present time, all older references previous to 1925 have been included as well as additions and corrections to the first list covering the period 1925 to 1928. It is planned to publish hereafter, annual supplemental lists in Resumptio Genetica to keep the results of investigations up to date until such time as their use to workers seems to have expired.

In collecting results so that they will be of most benefit it has seemed important that the investigators should know, as nearly as possible, the exact species or varieties that others have investigated. For this reason the names of varieties have always been listed. Wherever the authority for a species name had been given by a writer it has been included. Though this may not seem necessary in a large percentage of cases because the chromosome number given for a species name with or without the authority is the same, nevertheless, in looking through the list, cases will be found where a species of different authorities shows different numbers.

Following the plan of the previous list, two columns (n and 2n) have been arranged so that the haploid or diploid chromosome number might be inserted according as the number had been determined

in reduction or somatic divisions or in both. The same method has been followed of indicating univalent, trivalent or tetravalent chromosomes by sub-figures in the haploid column. Wherever other than bivalent chromosomes have been reported, the „n'' column includes the number of such as the numerator over the denominator 2 to indicate the approximate haploid number. The species and varieties have been listed in alphabetical order. Wherever species have been arranged in sections by the investigators such arrangement has been followed in the list and foot-notes include references to the classification followed. The arrangement of species under families and orders is according to ENGLER and GILG (1919).

This compilation has been made possible by the use of volumes in many libraries in the United States and Canada. The writer wishes especially to express gratitude to the libraries of the United States Department of Agriculture, Columbia University, the New York Botanical Garden, Toronto University, the Royal Canadian Institute and the Library of Congress for the great help they have given, as well as to other university libraries which have contributed assistance by inter-library loans.

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DICOTYLEDONEAE

	n	2n	
VERTICILLATAE.			
CASUARINACEAE			
Casuarina equisetifolia FORST prol.	12		WETZEL, 1928.
„ *montana* LESCHEN prol.	12		„ „
„ *quadrivalvis* [1]) . . .	8–12		JUEL, 1903*a*.
„ *stricta* AIT.	12		WETZEL, 1928
PIPERALES.			
SAURURACEAE			
Houttynia cordata THUNB. . .		52–56	SHIBATA & MIYAKE, 1908.
	ca. 50	100–104	SÖDERBERG, 1927.
Saururus cernuus	10		TÄCKHOLM & SÖDERBERG, 1918
PIPERACEAE			
Piper Betel L. var. *hispidula* .	16		JOHNSON, 1910.
„ *subpeltatum*	12		PALM, 1915.
	20		HÄUSER, 1916.
Peperomia blanda HUMB., BONPL. et KUNTH. .	12		HÄUSER, 1916.
„ *hispidula* A. DIETR.	12–14		JOHNSON, 1914.
„ *incana*	11		ABELE, 1924.
„ *magnoliifolia* (JACQ.) A. DIETR.	12		HÄUSER, 1916.
„ *pellucida*	10–12		BROWN, 1908.
„ *resediflora* ANDRÉ .	12		HÄUSER, 1916.
„ *sintensii*	8		BROWN, 1908.
SALICALES.			
SALICACEAE			
Populus canadensis	4	8	GRAF, 1921.
„ *Eugenei*	19 [2])		BLACKBURN (1926), 1929.
„ *generosa*	19 [2])		„ „ „
„ *serotina*.	19 [2])		„ „ „

[1]) According to ENGLER a. PRANTL, *C. quadrivalvis* LABILL. is synonymous with *C. stricta* AIT.

[2]) Sex chromosomes were present so that ♀n = 18 + x and ♂n = 18 + x or 18 + y

SALICACEAE (continued)	n	2n	
Populns (continued			
Populus tremula	4	8	GRAF, 1921.
„ *tremula* L.	19	38 [1])	BLACKBURN & HARRISON, 1924
„ *tremuloides* MICHX. .	19 [2])		ERLANSON & HERMANN, 1927.
SALIX			
Section Albae			
Salix alba L.	38		HARRISON, 1922.
	38	76	BLACKBURN & HARRISON, 1924
Section Phylicifoliae			
Salix Andersonia SM.	57		HARRISON, 1922.
	57+ [1])	100+	BLACKBURN & HARRISON, 1924
Section Capreae			
Salix aurita L.	38		HARRISON, 1922; BLACKBURN & HARRISON, 1922.
	38 [1])	76	BLACKBURN & HARRISON, 1924
„ *Caprea* L.	19		HARRISON, 1922; BLACKBURN & HARRISON, 1922; MEURMAN, 1925*a*.
	19	38	BLACKBURN & HARRISON, 1924
	38 [3])		HARRISON, 1922.
„ *cinerea* L.	38		HARRISON, 1922; BLACKBURN & HARRISON, 1922.
	38	76	BLACKBURN & HARRISON, 1924
Section Fragiles			
Salix fragilis L.	38 [1])		HARRISON, 1922.
	38	76	BLACKBURN & HARRISON, 1924
Section Purpurea			
Salix purpurea L.	19		HARRISON, 1922.
	19	34–40	BLACKBURN & HARRISON, 1924
Section Amygdalinae			
Salix triandra	19		HARRISON, 1922.
„ *triandra* L. (from Bedfordshire)	19	38	BLACKBURN & HARRISON, 1924.
„ *triandra* L. (from Kew) .	22	40+	„ „ „
Section Viminales			
Salix viminalis L.	19 [1])	38	„ „ „
„ *viminalis* L. var. *yezoensis Schneider*	19 [4])		SINOTO, 1928*a*.

[1]) BLACKBURN & HARRISON (1926) found one lobed chromosome apparently homologous with a smaller chromosome. As a result they concluded that „some evidence exists of heterochromosomes, probably sex-determining in their import."

[2]) Eighteen pairs of autosomes and an unequal pair of sex chromosomes were found.

[3]) While *S. Caprea* is in the main a diploid form, a tetraploid race indistinguishable in the field from the commoner diploid type was found.

[4]) An unequal pair of chromosomes was distinguishable.

	n	2n	
SALICACEAE (continued).	n	2n	
SALIX (continued).			
Section (?) [1])			
Salix japonica THUNB.	19 [2])		SINOTO, 1928*a*.
„ *leucopithecia* KIMURA . .	19 [2])		„ „
„ *melanostachys* MAKINO .	19 [2])		„ „
„ *sachalinensis* Fr. SCHMIDT	19 [2])		„ „
MYRICALES.			
MYRICACEAE			
Myrica rubra S. et Z.	8		SUGIURA, 1927.
JUGLANDALES.			
JUGLANDACEAE			
Juglans californica.		34	BABCOCK, given by PAPENOE, 1915.
„ „ WATS. . .		34	BABCOCK, 1915.
„ „ var. *quercina*		34	BABCOCK, given by PAPENOE, 1915; BABCOCK, 1915.
FAGALES.			
BETULACEAE			
Carpinus betulus L.	8		WETZEL, 1928.
Ostrya carpinifolia SCOP. . . .	8		„ „
Corylus americana	11		„ 1927.
„ *americana* MILL. . .	11		„ 1928.
„ *avellana*	11		„ 1927.
„ *avellana* L.	11		„ 1928.
„ *maxima*	11		„ 1927.
„ *maxima* MILL. . . .	11		„ 1928.
„ *rostrata* AIT. var. *Mandschuria* REGEL	11		„ „
Betula humilis SCHRANK . . .	14		„ „
„ *nana* L.	14		„ „
„ *pubescens*.	28		HELMS & JØRGENSEN, 1925.
„ *verrucosa*.	14		„ „ „ 1925.
„ *verrucosa* × *B. pubescens*	21		„ „ „ 1925.
Alnus cordata.	14		WETZEL, 1927.
„ *cordata* (LOIS). DESF.. .	14		„ 1928.
„ *glutinosa*	14		„ 1927.
„ *glutinosa* GAERTNER var. *vulgaris*	14		„ 1928.
„ *incana* MOENCH.	14		„ „
„ *japonica*	14		„ 1927.
„ *japonica* SIEB. et ZUCC. .	14		„ 1928.

[1]) The following 4 species were not classified under sections by SINOTO.
[2]) An unequal pair of chromosomes was distinguishable.

BETULACEAE (continued).	n	2n	
Alnus (continued)			
Alnus rubra	14		WETZEL 1927.
„ *rubra* BONG..	14		„ 1928.
„ *subcordata*.	14		„ 1927.
„ *subcordata* C. A. MEY . .	14		„ 1928.
„ *viridis* (CHAIX.) LAM.. .	14		„ „
FAGACEAE			
Fagus silvatica L.	11		„ „
Castanea crenata SIEB. et ZUCC.	11		„ „
„ *sativa* MILL.	11		„ „
Quercus cerris L..		22	„ „
Quercus coccinea MUENCH . .		8	COSENS 1912.
„ *coccinea* WANGG.. . . .	11		WETZEL, 1928.
„ *Dalechampii* TENORE .	11		„ „
„ *glandulifera* BLUME. .	11		„ „
„ *Koehni* (ilex × robur?)	11		„ „
„ *Libani* OLIV..	11		„ „
„ *macranthera* FISCH. u MEY.	11		„ „
„ *nigra* L.		22	„ „
„ *pontica* K. KOCH . . .	11		„ „
„ *robur* L. pp. (*Q. pedunculata*)	11		„ „
„ *sessilis* EHRH. (*Q. sessiflora* SALISB.)	11		„ „
URTICALES			
MORACEAE			
Morus acidosa GRIFF.	14	28	OSAWA, 1920.
„ *alba* LINN [1])	14		TAHARA, 1910.
	14	28	OSAWA, 1920.
„ *atropurpurea* ROXB. . .	14	28	„ „
„ *bombycis* KOIDZ. [1]). . .	14	28	„ „
	14 [2])		SINOTO, 1928*a*.
„ *indica*	14		TAHARA, 1910.
„ *Kagayamae* KOIDZ. . .	14	28	OSAWA, 1920.
„ *multicaulis* PERR. [1]) . .	14	28	„ „
„ *rotundifolia* KOIDZ. . .	14	28	„ „
„ *atropurpurea* × *M. alba* var. *Makado*.		42	„ „
Morus cultivated races [1]):			
Akagi	variable	42	„ „

[1]) A great number of the cultivated races in Japan are considered to have been derived from *M. alba*, *M. bombycis* and *M. multicaulis*. The chromosome numbers were determined in 85 races (OSAWA, 1920).

[2]) A pair of unequal chromosomes was distinguished by SINOTO

MORACEAE (continued)	n	2n	
Morus cultivated races (continued)			
Akazuru	14		OSAWA, 1920.
Aoki-ichihei	variable	42	„ „
Aoki-takasuke.	14		„ „
Aoshôdo		28	„ „
Avato	variable	42	„ „
Beniguki.	14	28	„ „
Benten		28	„ „
Bazan-oha		42	„ „
Date-akagi		42	„ „
Eiji-wase.	14		„ „
Enshû-takasuke		42	„ „
Enashi-guwa		28	„ „
Fushimagari		28	„ „
Ginryô		28	„ „
Gobô.	variable	42	„ „
Gorôji-wase		28	„ „
Goshoerami.	variable	42	„ „
Gumma-akagi		42	„ „
Hachiheiji	14		„ „
Heijirô.		42	„ „
Hikojirô	14		„ „
Ichihei.		42	„ „
Isebudo		42	„ „
Isemaguwa		42	„ „
Izu-wase	variable	42	„ „
Kairyô-nedzumigaeshi .		28	„ „
Kairyô-rosô.	14	28	„ „
Kairyô-wase-jûmonji. .		28	„ „
Kahachi	14		„ „
Kaneko	variable	42	„ „
Kanra-sô.	14	28	„ „
Kasô	14	28	„ „
Kattaneo.		28	„ „
Kazaemon		28	„ „
Kinbei	variable	42	„ „
Komaki	14	28	„ „
Kosaka	14	28	„ „
Kôsen	14		„ „
Koshiorihime		42	„ „
Kozaemon		42	„ „
Kumonryû	14	28	„ „
Makado		28	„ „
Mamono.	variable	42	„ „
Memurasaki		42	„ „

MORACEAE (continued)	n	2n	
Morus cultivated races (continued):			
Mikuni-sô		28	OSAWA, 1920.
Moku-wase		42	„ „
Murasaki-wase	14	28	„ „
Naganuma	14		„ „
Nagase		28	„ „
Nakamagi		28	„ „
Negoya-takasuke . . .		42	„ „
Nemurasaki		42	„ „
Obata	14	28	„ „
Ôgon		42	„ „
Ôshima		42	„ „
Ôshu-guwa	variable	42	„ „
Ô-wase		42	„ „
Ozuna	variable	42	„ „
Rokunojô		42	„ „
Sagami-wase		42	„ „
Sagore		28	„ „
Sanchû-takasuke . . .		42	„ „
Senmatsu	14	28	„ „
Shidare-guwa		28	„ „
Shihôzaki		42	„ „
Shimidzu-wase	14	28	„ „
Shinamura	14	28	„ „
Shigohachi	14	28	„ „
Shimauchi		42	„ „
Shônai-wase	14	28	„ „
Sôsuke-wase	14	28	„ „
Shiroshita	14	28	„ „
Tago-wase	variable	42	„ „
Taiyô	variable	42	„ „
Takahashi		28	„ „
Takara-sô		28	„ „
Tôsuke		42	„ „
Tsuruta	variable	42	„ „
Yamato-wase		42	„ „
Yanagita	variable	42	„ „
Yatsubusa	14	28	„ „
Y[illegible]chi		28	„ „
Z[illegible]		42	„ „
Cudrania triloba HANCE . . .	28 [1]		SINOTO, 1928*a*.

[1]) A pair of unequal chromosomes was distinguished by SINOTO.

MORACEAE (continued)	n	2n	
FICUS [1])			
Section Eusyce			
Ficus carica LINN.	13	26	CONDIT, 1928.
„ *erecta* THUNB.		26	„ „
„ *palmata* FORSK.	13	26	„ „
„ *pseudo-carica* MIQ. . . .		26	„ „
Section Urostigma			
Ficus elastica ROXB.		26	„ „
„ *rubiginosa* DESF.		26	„ „
Section Neomorphe			
Ficus glomerata ROXBG. . . .		probably 24	„
Humulus japonicus SIEB. et ZUCC.	8		WINGE, 1914.
„ *japonicus*	10 [2])	20	TOURNOIS, 1914; WINGE, 1917, 1923.
		16	BARTLETT, 1915*b*.
„ *japonicus* (male) . .	7+13 [3])	17	KIHARA, 1928.
„ *japonicus* (plants of unknown sex) . . .		16–17	„ „
„ *lupulus* L.	10 [2])	20	TOURNOIS, 1914; WINGE, 1914, 1917, 1923.
		20	BARTLETT, 1915*b*; WETTSTEIN, 1925.
Cannabis gigantea		20 & 40	BRESLAWETZ [4]), 1926; LANGLET, 1927*b*.
„ *sativa*	10 [5])		STRASBURGER, 1910*c*; TOURNOIS, 1914; MCPHEE, 1924;
		20 & 40	BRESLAWETZ [4]), 1926; LANGLET, 1927*b*.
„ *sativa* L.	10		SINOTO, 1928*a*.
„ *sativa* var. *Karafuto* .	10	20	HIRATA, 1924.
„ *sativa* var. *Tochigi*. .	10	20	„ „
„ *sativa* L. var. *Kif* DC		20 & 40	DE LITARDIÈRE, 1925.
„ *sativa* L. var. *communis*.		20 & 40	„ „ „

[1]) Classification under sections is according to KING (1887—1888).

[2]) WINGE (1923) found heterochromosomes and gave the chromosome complex as: ♀ 2n = 18 + x + x; ♂ 2n = 18 + x + y; ♀n = 9 + x; ♂ n = 9 + x or 9 + y.

[3]) According to KIHARA (1928) the complex is represented by ♂n = 7 + y_1 + x + y_2 and ♀n = 7 + x + x.

[4]) By this investigator, the cells of the central cylinder of root-tips were found to contain 20 chromosomes, while the outher cells contained 40.

[5]) STRASBURGER in 1909 had counted only 8 chromosomes.

	n	2n	
URTICACEAE	n	2n	
Urtica dioica L.	16		STRASBURGER, 1910*b*.
	24 [1])		MEURMAN, 1925 *a, b*.
		48–49	HEITZ, 1926.
„ *Dodarti*		24	„ „
„ *pilulifera*		24	„ „
„ *urens* L.	16		STRASBURGER, 1910*b*.
	12		MEURMAN, 1925*a, b*.
Elatostema acuminatum. . . .	16		STRASBURGER, 1910*b*.
„ *sessile*		32	STRASBURGER, 1910*b*.
SANTALALES			
SANTALACEAE			
Thesium intermedium L. . . .	probably 12	probably 24	MODILEWSKI, 1928*b*.
PROTEACEAE			
Protea lepidocarpon R. BR. . .	12		BALLANTINE, 1909.
LORANTHACEAE			
Dendrophthora gracile EICH. .	9	18–20	YORK, 1913.
„ *opuntioides* (L)EICH. . . .		18–22	„ „
Viscum album.		20	PISEK, 1922.
	10	20	„ 1923.
BALANOPHORACEAE			
Helosis guyanensis RICH. . . .	18		UMIKER, 1920.
Balanophora elongata BL. . . .		ca. 16	ERNST, 1914.
„ *japonica*		94–112	KUWADA, 1928.
ARISTOLOCHIALES			
ARISTOLOCHIACEAE			
Aristolochia clematitis	7		SAMUELSON, 1914.
„ *fimbriata*	7		TÄCKHOLM & SÖDERBERG, 1918
„ *Sipho*	14		„ „ „ „
Asarum europaeum	ca. 12		„ „ „ „
RAFFLESIACEAE			
Rafflesia Patma BL.	12		ERNST & SCHMID, 1913.
HYDNORACEAE			
Hydnora africana THUNB. .		24 [2])	DASTUR, 1921.
POLYGONALES			
POLYGONACEAE			
Koenigia Islandica L.	14		HAGERUP, 1926.
Emex australis STEINH. . . .	10		JARETZKY, 1928*c*.
„ *spinosa* CAMPD.	10		„ 1927*b*, 1928*c*.

[1]) MEURMAN (1925*b*) found heterochromosomes: ♂n = 23 + x or 23 + y.
[2]) In previous list, GAISER (1926), this number was printed in the haploid column. Twenty-three chromosomes were actually counted by DASTUR.

POLYGONACEAE (continued)	n	2n	
RUMEX [1])			
Section Lapathum			
Subsection Eulapathum			
Rumex alpinus	10		KIHARA & ONO, 1926.
„ *alpinus* L.	10		JARETZKY, 1928*c*.
„ *Andraeanus*	60		KIHARA & ONO, 1926.
„ *aquaticus* L.		ca. 200	JARETZKY, 1928*c*.
„ *britannicus* L.		20	„ „
„ *conglomeratus* MURR.		20	„ „
„ *cordifolius*	40		ROTH, 1906.
„ *crispus*	32		DUDGEON, 1918.
	30		KIHARA & ONO, 1926; KIHARA, 1927*b*.
„ *crispus* L.	30		JARETZKY, 1927*a*.
„ *Daivoo* MAKINO		ca. 60	„ 1928*c*.
„ *dentatus* L.	20	40	„ 1928*c*.
„ *domesticus*		40	KIHARA & ONO, 1926.
„ *flexuosus*	10		JARETZKY, 1927*a*.
„ *hydrolapathum*	100		KIHARA & ONO, 1926; KIHARA, 1927*b*.
„ *hymenosepalus*	50		KIHARA & ONO, 1926; KIHARA, 1927*b*.
„ *japonicus*	50		KIHARA & ONO, 1926; ONO, 1926*a*.
„ *limosus* THUILL.		40	JARETZKY, 1928*c*.
„ *maritimus*	20		KIHARA & ONO, 1926.
„ *maritimus* L.	20	40	JARETZKY, 1927*a*.
„ *maritimus* L. var. *stenophyllus* ZAP.	20		JARETZKY, 1928*c*.
„ *obtusifolius*	20		KIHARA & ONO, 1926; KIHARA 1927*b*.
„ *orientalis*	30		KIHARA & ONO, 1926.
„ *palustris* SM.		40	JARETZKY, 1928*c*.
„ *patientia*	30		KIHARA & ONO, 1926; KIHARA, 1927*b*.
„ *pulcher* L.		40	JARETZKY, 1928*c*.
„ *reticulatus* BESSER.	20	40	„ „
„ *salicifolius*	10		KIHARA & ONO, 1926; KIHARA 1927*b*.
„ *salicifolius* WEINM.	10		JARETZKY, 1928*c*.
„ *sanguineus*	10		ONO ,1927*b*.
„ *sanguineus* L.	10	20	JARETZKY, 1928*c*.
Subsection Bucephalophorus			
Rumex bucephalophorus	8		JARETZKY, 1927*a*.

[1]) ENGLER & PRANTL's sections are Lapathum and Acetosella.

POLYGONACEAE (continued)	n	2n	
RUMEX (continued)			
Section Acetosa			
Rumex acetosa	8		ROTH, 1906.
„ *acetosa* L.	7, 8 [1])	14, 15	KIHARA & ONO, 1923*a*, *b*, 1925; SINOTO, 1924.
		22 [2])	ONO & SHIMOTOMAI, 1928.
		29 [3])	„ „ „ „
„ *acetosa* (female)	7 [4])		ONO, 1928.
	15 [5])		„ „
		21 [6])	„ „
„ *acetosa* (intersexual)		22 [7])	„ „
„ *acetosa* L. var. *haematinus* KIHLMAN	7, 8		JARETZKY, 1928*c*.
„ *acetosa* L. var. *pretensis* WALLR.	7, 8		„ „
„ *acetosella*	16		ROTH, 1906.
	20, 21 [8])		MEURMAN, 1925*a*, *b*; KIHARA, 1925, 1927*b*.
„ *acetosella* L.	21, 22	42, 43	KIHARA, 1927*a*.
„ *arifolius*	8		ROTH, 1906.
„ *arifolius* (male)	7, 8 [9])		KIHARA & ONO, 1926.
„ *arifolius* ALL.	7, 8		JARETZKY, 1927*b*, 1928*c*.
„ *hispanicus*	8		ROTH, 1906.
„ *hispanicus* KOCH.	7, 8		JARETZKY, 1928*c*.
„ *lunaria* L.		20	„ „
„ *nivalis*	8		ROTH, 1906.
„ *nivalis* (male)	7, 8 [9])		KIHARA & ONO, 1926.
„ *roseus* L.	10		JARETZKY, 1928*c*.
„ *rugosus* CAMPD.	7, 8		„ „

[1]) The chromosome complex is written ♀ $2n = 12a + M + M$; ♂ $2n = 12a + m_1 + M + m_2$; ♀$n = 6a + M$; ♂ $n = 6a + M$ or $6a + m_1 + m_2$; by KIHARA & ONO. ONO (1926*c*) describes the heterochromosomes as consisting of a larger two-armed X chromosome and 2 smaller Y (Y_1 and Y_2) chromosomes.

[2]) The chromosome complex is written $2n = 18 + 2x + 2y$.

[3]) The chromosome complex is written $2n = 24 + 3x + 2y$.

[4]) In the diakinesis of megaspore mother cells, one pair of chromosomes was very much larger than the others and considered to be the pair of X chromosomes.

[5]) This unreduced number was found in the heterotypic nuclear division of some pollen mother cells.

[6]) In this triploid female the chromosome complex is written $2n = 18 + 3X = 21$; ♀$n = 12 + X$; ♂$n = 6 + X$.

[7]) In this the chromosome complex is $2n = 18 + 2x + 2y = 22$.

[8]) MEURMAN (1925*b*) reports the chromosome complex ♂$n = 19 + 2x$ or $19 + Y$. KIHARA (1925) reports ♂ $2n = 38a + X + X + Y$; ♀ $2n = 38a + X + X + X + X$

[9]) The chromosome complex in these two species is written ♂ $n = 6 + X$, or $6 + Y + Y$.

POLYGONACEAE (continued)	n	2 n	
RUMEX (continued)			
Section Acetosa (continued)			
Rumex scutatus	8		ROTH, 1906.
	10 [1]		NODA, 1926; KIHARA & ONO, 1926.
„ *scutatus* L. var. *glaucus*		20 [2]	JARETZKY, 1928*c*.
„ *thyrsiflorus* FINGERH.	7, 8 [3]		MEURMAN, 1925*a*, *b*.
„ *tuberosus* L.	7, 8		JARETZKY, 1928*c*.
„ *vesceritensis* MURB.		20	„ „
„ *vesicarius* L.		20	„ „
	9	18	ONO, 1928.
„ *verticillatus* [4]	ca. 24		FINK, 1899.
„ *sp?*	20		ONO, 1926.
Rheum crassinervium FISCHER	22		JARETZKY, 1928*c*.
„ *Emodi* WALL.	11		„ „
„ *officinale* BAILL.	11		„ 1927*b*.
	11	22	„ 1928*c*.
„ *palmatum* L.	11	22	„ 1927*b* 1928*c*.
„ *rhaponticum* L.	22		„ 1928*c*.
„ *spiciforme* ROYLE	11		„ „
„ *undulatum* L.	22		„ 1927*b* 1928*c*.
Oxyria digyna HILL.	7		KIHARA & ONO, 1926; KIHARA, 1927*b*; JARETZKY, 1928*c*.
„ *elatior* R. BR.	7		ONO, 1928; JARETZKY, 1928*c*.
POLYGONUM [5]			
Section Bistorta			
Polygonum affine DON.	11	22	JARETZKY, 1928*c*.
„ *ambiguum* MEISSN.	22		„ „
„ *bistorta* L.	22		„ „
„ *sphaerostachyum* MEISSN.		22	„ „ *c*
„ *vacciniifolium* WALL	11		„ „
„ *viviparum* L.		110(?)	„ „
Section Cephalophilon			
Polygonum capitatum HAMILT.	11	22	JARETZKY, 1928*c*.
Section Amblygonon			
Polygonum orientale L.	11	22	JARETZKY, 1928*c*.

[1]) NODA always found one pair of chromosomes on the margin of the equatorial plate to be larger.

[2]) Tetraploid cells with 18 paired and 2 separate chromosomes were found.

[3]) MEURMAN (1925*b*) reported chromosome complex as ♂ $n = 6 + X$ or $6 + 2Y$.

[4]) This species was not classified according to section.

[5]) These section names are as in ENGLER & PRANTL but the order of arrangement of sections differs.

POLYGONACEAE (continued)	n	2n		
POLYGONUM (continued)				
Section Tovara				
Polygonum filiforme THUNB.		ca. 44	JARETZKY,	1928*c*.
„ *virginianum* L.	22		„	„
Section Persicaria				
Polygonum amphibium L.		ca. 66	„	„
„ *Blumei* MEISSN.		40	„	„
„ *danubiale* KERNER.		22	„	„
„ *hydropiper* L.		20	„	„
„ *lapathifolium* L.		22	„	1927*b*.
„ *nodosum* PERS. (— *P. lapathifolium* L)	11	22	„	1928*c*.
„ *persicaria* L.	22	44	„	1927*b*, 1928*c*.
„ *spectabile* MART.		66 [1])	„	1928*c*.
„ *tinctorium* LOUR.		40 [2])	„	„
„ *tomentosum* SCHRANK.	11	22	„	„
Section Aconogonon				
Polygonum alpinum ALL.	10	20	„	„
„ *divaricatum* L.	50	ca. 100	„	„
„ *Laxmanni* LEPECH.	10		„	„
„ *molle* DON.	10	20	„	„
„ *polystachyum* WALLICH.		22	„	„
„ *sericeum* PALL.	10	20	„	„
Section Avicularia				
Polygonum agryrocoleon STEUDEL		40	„	„
„ *aviculare* L. (forma)		40	„	„
„ *aviculare* var. *monspeliense* THIÉB.	20	40	„	„
„ *Bellardi* ALL.	10	20	„	„
„ *maritimum* L.		20	„	„
„ *plebejum* R. BR.	20	40	„	„
Section Pleuropterus				
Polygonum compactum HOOK.		ca. 44	„	„
„ *cuspidatum* SIEB. et ZUCC.		88(?)	„	„
„ *sacchalinense* F. SCHM.		ca. 44	„	1927*b*; 1928*c*.

[1]) The actual counts were 62, 63, 64, and 65; therefore, probable number is 66.
[2]) In more than 10 plates not more than 40 chromosomes were ever counted.

POLYGONACEAE (continued)	n	2n	
POLYGONUM (continued)			
Section Tiniaria			
Polygonum Auberti HENRY . .		20	JARETZKY, 1928*c*.
„ *cilinode* MICH. . .	10		„ „
„ *convolvulus* L.. . .	10	20	„ „
„ *dumetorum* L.. . .	10		„ „
„ *Savatieri* NAKAI . .	10		SUGIURA, 1925*b*.
Pleuropteropyrum Weyrichii var. *alpinum* (MAX) GROSS (= *Polygonum Savatieri* MAK.)	10		JARETZKY, 1928*c*.
Pleuropteropyrum Weyrichii. .	10		SUGIURA, 1928*a*.
„ *Weyrichii* (F. SCHMIDT) GROSS	10	20	JARETZKY, 1928*c*.
Persicaria glandulosa.		22	SUGIURA, 1928*a*.
„ *perfoliata*		22	„ „
„ *Thunbergii*		ca. 34	„ „
Amblygonon orientale.		22	„ „
Fagopyrum cymosum MEISSN. .	8		JARETZKY, 1928*c*.
„ *emarginatum* . . .		16	QUISENBERRY, 1927.
„ *emarginatum* MEISSN.	8	16	JARETZKY, 1928*c*.
„ *esculentum*		16	„ 1927*b*.
„ *esculentum* MOENCH	8		STEVENS, 1912, TAYLOR, 1925*c*.
„ *esculentum* var. Japanese	8	16	QUISENBERRY, 1927.
„ *esculentum* var. Silverhull	8	16	„ 1927.
„ *gracilipes* HEMSL. .		16	JARETZKY, 1928*c*.
„ *rotundatum* BAB. .		16	„ „
„ *tartaricum*		16	„ „
„ *tartaricum* var. Notch Seeded . .		16	QUISENBERRY, 1927.
Antigonon leptopus HOOK. . .		40	JARETZKY, 1928*c*.
Mühlenbeckia complexa MEISSN.		.	
„ *platyclados* MEISSN. . . .		20	„ „
„ *sagittifolia* MEISSN. . . .		40	„ „
Coccoloba diversifolia JACQ. .		200(?)	„ „
Triplaris surinamensis CHAM. .		22	„

CENTROSPERMAE	n	2n	
CHENOPODIACEAE			
Beta maritima (= *B. vulgaris* var. *perennis*)	9 [1])		WINGE, 1917, 1925.
„ *maritima* L.	9		KUZMINA, 1927.
„ *trigyna*	27		BLEIER, 1928*b*.
„ *vulgaris* L.	9		WINGE, 1925, 1927*b*.
			DUDOK VAN HEEL, 1925; ARTSCHWÄGER, 1927; SUGIURA, 1927; OKSIJUK, 1927; LEVITSKY, 1927; BLEIER, 1928*b*.
		18 [2])	NEMEC, 1926; WINGE, 1927*b*.
„ *vulgaris* L. var. *chiloensis* HORT.	9		VILMORIN et SIMONET, 1927*b*.
„ *vulgaris* L. var. *saccharifera*	9	18	KUZMINA, 1927.
„ *vulgaris* × *B. trigyna* . .	$9+\frac{18}{2}$		BLEIER, 1928*b*.
Chenopodium album	9		WINGE, 1917.
„ *bonus henricus* .	18		„ „
„ *hybridum*. . . .	9		„ „
„ *murale*	9		„ „
„ *vulvaria*	9		„ „
Spinacea oleracea	6		STOMPS, 1910; WINGE, 1917, 1923.
		12, 24, 48	DE LITARDIERE, 1923*b*.
„ *oleracea* var. *Viktoria*		12, 24, 48 [3])	LANGLET, 1927*b*.
„ *oleracea* var. Weibull's original *Valkyria II*		12, 24, 48 [3])	LANGLET, 1927*b*.
Atriplex hastata		ca. 24	ROSENBERG, 1909*c*.
„ *hastatum*	9		WINGE, 1917.
„ *hortensis* L.	9		TJEBBES, 1928.
„ *littorale*	9		WINGE, 1917.
„ *patulum*	18		„ „

[1]) The cultivated beet-root and sugar-beet were both found by WINGE (1925) to have 9 chromosomes. MATTHIJSEN according to FRANCK (1911) found n = 8 for a cultivated form.

[2]) NĚMEC found some giant cells containing 44—45, 46, 56, and 120 chromosomes. WINGE (1927*b*) found cells with 36, 72, and ca. 144 chromosomes in cancer tissue on a root (36 was the number found most frequently).

[3]) LANGLET found cells with 12 chromosomes in the youngest part of the periblem, cells with 24 chromosomes in a somewhat older part of the periblem, and still farther from the growing point cells with 48 chromosomes.

CHENOPODIACEAE (continued)	n	2n	
Bassia hirsuta	9		WINGE, 1917.
Hablitzia tamnoides	9		DAHLGREN, 1916; WINGE, 1917.
NYCTAGINACEAE			
Mirabilis Jalapa	ca. 16 ¹)		TISCHLER, 1908.
	27		„ 1928*b*.
„ *tubiflora*	ca. 16 ¹)		„ 1908.
	27		„ 1928*b*.
„ *Jalapa* × *M. tubiflora*	ca. 16		„ 1908.
CYNOCRAMBACEAE			
Thelygonum Cynocrambe L.		20	SCHNEIDER, 1913.
PHYTOLACACEAE			
Phytolaca decandra	18		KLEINMAN, 1923.
PORTULACACEAE			
Portulaca grandiflora LINDL.	9		TJEBBES, 1928.
CARYOPHYLLACEAE			
Agrostemma Githago	ca. 20		ROCÉN, 1926, 1927.
	24		BLACKBURN, 1928.
Viscaria alpina	12		„ „
„ *oculata* LINDL.	12		TJEBBES, 1928.
„ *coeli-rosa* DC	12		„ „
„ *Sartori*	12		BLACKBURN, 1928.
„ *oculata* × *coeli-rosa*	12		TJEBBES, 1928.
Silene acaulis	12		BLACKBURN, 1928, (1926), 1929
„ *antirrhina*	12		„ „ „ „
„ *armeria*	12		„ „
„ *asterias*	12		„ „
„ *Behen*	12		„ „ „ „
„ *Bergiana*	12		„ „ „ „
„ *ciliata* (Edinburgh Bot. Gardens)	12		„ „
„ *ciliata* (CHODAT's Alpine Garden)	24		„ 1927 1928.
„ *ciliata* (Kew Gardens)	96		„ „ 1928.
„ *compacta*	12		„ „
„ *conica*	12		„ „
„ *conoidea*	12		„ „
„ *corrugata*	12		„ „
„ *cretica*	12		„ „
„ *dichotoma*	12		„ „
„ *disticha*	12		„ „
„ *echinata*	12		„ „
„ *Elisabethae*		ca. 24	HEITZ, 1926.

¹) These numbers were judged by the chromosome number of the hybrid.

CARYOPHYLLACEAE (continued)	n	2n	
Silene (continued)			
Silene fimbriata	12		BLACKBURN, 1928.
„ *Friwaldskyana*	ca. 24		ROCÉN, 1926, 1927.
	12		BLACKBURN, 1928.
„ *fruticosa*	12		„ „
„ *fuscata*	12		„ „
„ *gallica*	12		„ „
„ *gigantea*	12	24	HEITZ, 1926.
„ *glauca*	12		BLACKBURN, 1928.
„ *inflata*	12		„ „ (1926), 1929
„ *inflata* f. *alpina*	12		HEITZ, 1926.
„ *integripetala*	12		BLACKBURN, 1928.
„ *italica*	12		„ „ (1926), 1929
„ *linicola*	12		„ „
„ *maritima*	12		„ „
„ *mekinensis*	12		„ „ (1926) 1929,
„ *mentagensis*	12		„ „
„ *muscipula*	12		„ „
„ *nicaensis*	12		„ „
„ *noctiflora*		24	HEITZ, 1926.
„ *nutans*	12 [1])		BLACKBURN, 1928, (1926) 1929.
„ *obtusifolia*	12		„ „
„ *otites*	12 [2])		„ „ (1926) 1929.
„ *pendula*	12		„ 1924, 1928.
„ *rupestris*	12		„ 1928.
„ *saxifraga*	12		„ „
„ *schafta*	12		„ „
„ *sericea*	12		„ „
„ *Sinowatsoni*	12 [3])		„ „
„ *squamigera*	12		„ „
„ *tatarica*	12		„ „
„ *tenuis*	12		„ „
„ *vallesia*	24		„ 1927, 1928.
„ *virescens*	12		„ 1928.
„ *viridella*	12		„ (1926) 1929.
„ *viridiflora*	12		„ 1928.
„ *volubilitana*	12		„ „
„ *Zawadskii*		24	HEITZ, 1926.
Eudianthe coeli-rosea	12		BLACKBURN, 1928.
„ *corsica*	12		„ „

[1]) This species shows 1 pair of ring-shaped bivalents approximately twice the size of the others.

[2]) This species has an XY pair of chromosomes in the male plant. So ♂ n = 11 + X or 11 + Y and ♀ n = 11 + X.

[3]) This shows a different type of chromosome.

CARYOPHYLLACEAE (continued)	n	2n	
Lychnis (continued)			
Lychnis Arkwrightii	12		BLACKBURN 1928.
„ *chalcedonica*	12		„ „
„ *coronaria*	12		„ „
„ *flos cuculi*	12	24	„ 1924.
„ *flos cuculi*	12		HEITZ, 1926; BLACKBURN, 1928
„ *flos Jovis*	12	24	BLACKBURN, 1928.
„ *flos Jovis*	12		„ „
„ *Haageana*	12		„ „
„ *hybrida*	12		„ „
„ *Sieboldii* VAN HOUTTE.	12 [1]		TAKAGI, 1928*a*.
Petrocoptis Lagascae	12		BLACKBURN, 1928.
Heliosperma alpestre	12		ROCÉN, 1926, 1927; BLACKBURN, 1928.
„ *quadrifidum* . . .	12		BLACKBURN, 1928.
Melandrium album.	12		SCHÜRHOFF, 1919, 1925*b*; WINGE, 1923 [2]); HEITZ, 1925*a*, *b*, 1926; MEURMAN 1925*b* [2]); BELAR, 1925 [2]); BLACKBURN, 1928 [2]), (1926) 1929:
„ *album* var. *glabrum*	12		BLACKBURN, (1926) 1929.
„ *auriculatum* . . .	12		„ 1928.
„ *californicum* . . .	24		„ „
„ *divaricatum* [3]) . .	12		„ „ (1926) 1929.
„ *Elizabethae* . . .	12		„ „
„ *glutinosum* [3]) . .	12		„ „ (1926) 1929.
„ *noctiflorum* L. FRIES.	12		SCHÜRHOFF, 1925.
„ *noctiflorum* . . .	12		BLACKBURN, 1928.
„ *pennsylvanicum* .	24		„ „
„ *rubrum* [3])	12		STRASBURGER, 1910*b*; *c*; SCHÜRHOFF, 1925*b*; MEURMAN [4]), 1925*b*; HEITZ [4]);

[1]) Under a temperature of 38°—39° C. abnormalities in chromosome division occurred. As a result of non-conjunction of 24 univalents, diads might be produced, or following non-conjunction the 24 univalents might be distributed irregularly to the 2 poles and followed by homeotypic division give rise to tetrads with 2 larger and 2 smaller cells. The univalents, too, might split, giving rise to as many as 40 chromosomes to tetrads with varying numbers of cells.

[2]) According to these authors an XY pair of chromosomes is present in the male plant. So ♂n = 11 + X or 11 + Y and ♀n = 11 + X.

[3]) In these species and this hybrid an unequal pair of heterochromosomes occurs in the male. So ♂n = 11 + X or 11 + Y.

[4]) These authors confirm the finding of an XY pair in *Melandrium rubrum*.

CARYOPHYLLACEAE (continued)	n	2n	
Melandrium (continued)			
			1925*b*, 1926; ÅKERLUND [1]); 1927; BLACKBURN [2]), 1928 (1926), 1929.
Melandrium virginicum	24		BLACKBURN, 1928.
„ *„yunnanense"* . .	12		„ „
„ *Zawadskii* . . .	12		„ „
„ *album* × *rubrum* [3])	12		„ „ (1926) 1929.
Cucubalus baccifer	12		„ „
Gypsophila elegans	17		„ „
„ *perfoliata*	ca. 24		ROCÉN, 1926, 1927.
„ *repens*	18	35–36	HEITZ, 1926.
Vaccaria segetalis	15		BLACKBURN, 1928.
Dianthus barbatus	15		„ „
„ *deltoides*	15		„ „
Saponaria calabrica	14		„ „
„ *ocymoides*	14		„ „
„ *officinalis*	14		HEITZ, 1926, ROCÉN, 1927; BLACKBURN, 1928.
	14–16		ROCÉN, 1926.
„ *pulchella*	14		BLACKBURN, 1928.
Stellaria graminea	(13)–14	(26)–28	HEITZ, 1926.
„ *holostea*	10		ROCÉN, 1926.
	ca. 10		„ 1927.
„ *media*		36–42	HEITZ, 1926.
	ca. 20		ROCÉN, 1927.
„ *uliginosa*		24–26	HEITZ, 1926.
Malachium aquaticum	14		„ „
Cerastium triviale		ca. 110	„ „
„ *sp.*		ca. 100	„ „
Spergula arvensis		18	„ „
Corrigiola littoralis	ca. 8(?)		ROCÉN, 1927.
RANALES			
NYMPHAEACEAE			
Nelumbo lutea WILLD.	ca. 8		FARR, 1922.
„ *lutea*		16	LANGLET & SÖDERBERG, 1927.
„ *nucifera*		16	„ „ „ „
Cabomba caroliniana	12	24	NITZSCHKE, 1914.
„ *caroliniana* (?) . . .		104(?)	LANGLET & SÖDERBERG, 1927.
Brasenia purpurea		80(?)	„ „ „ „
Victoria crusiana	(12)[4])		„ „ „ „

[1]) ÅKERLUND conisdered there were heterochromosomes as ♀n = 11 + X.
[2]) These authors confirm the finding of an XY pair in *Melandrium rubrum*.
[3]) See footnote 3 on page 189.
[4]) Judged by the hybrid (*V. regia* × *V. crusiana*) only.

NYMPHAEACEAE (continued)	n	n2	
Victoria (continued)			
Victoria „imperialis hybrida" (*V. regia* × *V. cruziana*)		22	LANGLET & SÖDERBERG, 1927.
„ *„pseudocruziana"*		23	„ „ „ „
„ *regia*		20	„ „ „ „
Euryale ferox		58	„ „ „ „
Nymphaea alba	32		GUIGNARD, 1897, 1898.
	48		STRASBURGER, 1900.
		ca. 48	LIEHR, 1916.
	56 or 42 [1])		LANGLET & SÖDERBERG, 1927.
„ *candida*	ca. 58	ca. 112	„ „ „ „
„ *capensis*	14 [2])		„ „ „ „
„ *capensis* var. *zanzibariensis*		28	„ „ „ „
„ *gigantea*	112(?)	224(?)	„ „ „ „
„ *lotus*		56	„ „ „ „
„ *mexicana*		56	„ „ „ „
„ *odorata*		84	„ „ „ „
„ *rubra*		56	„ „ „ „
„ *stellata*		28	„ „ „ „
„ *tetragona*		112	„ „ „ „
„ *tuberosa*	(42)[2])		„ „ „ „
„ *sp.* (from Madagascar)		28	„ „ „ „
„ *„Hofgärtner* GRAEBNER" (*N. lotus* × *N. rubra*)		56	„ „ „ „
„ *„tetragona helvola"* (*N. mexicana* × *N. tetragona*)		84	„ „ „ „
Nuphar advena		34	„ „ „ „
„ *japonicum*		34 [3])	„ „ „ „
„ *luteum*	16		GUIGNARD, 1897.
	17		LUBIMENKO & MAIGE, 1907.
		34	ROSENBERG, 1909*c*; LANGLET & SÖDERBERG, 1927.
		ca. 48	LIEHR, 1916.
„ *microphylla*		34	LANGLET & SÖDERBERG, 1927.
„ *pumilum*		34	„ „ „ „

[1]) No figures of this species were seen by LANGLET & SÖDERBERG)1927) but they have interpreted a Figure of LUBIMENKO & MAIGE (1907) as having ca. 42 chromosomes.

[2]) Judged by hybrids of each.

[3]) One pair of chromosomes is outstanding because of a relatively large pair of satellites.

CERATOPHYLACEAE	n	2n	
Ceratophyllum demersum . . .	ca. 12		LANGLET & SÖDERBERG, 1927.
„ *submersum*. . .	12		STRASBURGER, 1902.
RANUNCULACEAE . . .			
Glaucidium palmatum SIEB. et ZUCC.		20	MIYAJI, 1927*b*.
Hydrastis canadensis		26 [1]	LANGLET, 1928.
Paeonia albiflora PALL		10	MIYAJI, 1927*b*.
	5		LANGLET, 1927*a*.
„ *albiflora* var. „*Agida*".	5		„ „
„ *albiflora* var. „*Boule de Neige*"	5		„ „
„ *albiflora* var. „*Etienne Denis*"	5		„ „
„ *albiflora* var. „*Kasuga-no*"		10	„ „
„ *albiflora* var. „*Nobilis-sima*"	5		„ „
„ *albiflora* var. „*Potsii-plena*"	5		„ „
„ *albiflora* var. „*Prince Antoine d'Ahrenberg*"	5		„ „
„ *albiflora* var. „*Rubens*"	5		„ „
„ *anomola*		10	„ „
„ *anomola hybrida* . . .	5		„ „
„ *anomola nudicarpa* . .	5		„ „
„ *Bakeri*		20	„ „
„ *corallina Corsica* . . .		10	„ „
„ *corallina Russii* . . .		10	„ „
„ *corallina triternata* . .	5		„ „
„ *coriacea*.	10		„ „
„ *decora*	10		„ „
„ *Delavayi lutea*	5		„ „
„ *Mlokasewitschii* . . .		10	„ „
„ *Moutan*.	5		„ „
„ *obovata* var. *alba* . . .		20	„ „
„ *officinalis*	8		WEFELSCHEID, 1911.
„ *officinalis eufemina*. .	10		LANGLET, 1927*a*.
„ *officinalis humilis* . .	10		„ „
„ *officinalis leijocarpa* .	10		„ „
„ *officinalis* var. „*muta-bilis*"	10		„ „
„ *officinalis* var. „*rubr.-plen.*"	10		„ „

[1]) One pair of chromosomes was recognized by its quite large satellites.

RANUNCULACEAE (continued)	n	2n	
Paeonia (continued)			
Paeonia officinalis villosa . . .	10		LANGLET, 1927*a*.
„ *peregrina*	8		WEFELSCHEID, 1911.
„ *tenuifolia*		10	LANGLET, 1927*a*.
„ *Veitchii*.	5		„ „
„ *Wittmaniana*		20	„ „
„ (several species) . . .	12	24	OVERTON, E., 1893*a, b*.
„ *albiflora* × *P. Wittmaniana*		15	LANGLET, 1927*a*.
„ *anomala* × *P. tenuifolia*		10	„ „
„ *officinalis* × *P. Wittmaniana*		20	„ „
Caltha laeta var. *alpina* . . .		32	LANGLET, 1927*a*.
„ *leptocephala*.		48	„ „
„ *palustris*		32	„ „
„ *palustris* var. *flor. plen.*		ca. 58–59	„ „
„ *palustris* var. *flor. plen. nana*		ca. 58–59	„ „
„ *palustris* var. *flor. plen. praecox*		ca. 58–59	„ „
„ *palustris* var. *semiplena*.		ca. 58–59	„ „
„ *radicans* FORST..		48	HOCQUETTE, 1922.
Trollius caucasicus.		16	LANGLET, 1927*a*.
„ *chinensis*		16	„ „
„ *europaeus*	12 [1]		LUNDEGARDH, 1909.
	11–12		LUNDEGARDH, 1914*b*.
		16	LANGLET, 1927*a*.
„ *hybridus* HORT. var. *Orange Globe*		16	„ „
Helleborus foetidus L.	16		MOTTIER, 1897.
„ *foetidus*	12		STRASBURGER, 1888; OVERTON, J. B., 1905.
„ *foetidus*.		32	LANGLET, 1927*a*.
„ *hybridus* HORT. . .		32	„ „
„ *niger*		32	„ „
Nigella aristata		12	„ „
„ *arvensis* L.		12	HOCQUETTE, 1922.
„ *arvensis*	6		LANGLET, 1927*a*.
„ *damascena*	> 10 [2]		GUIGNARD, 1901.
	6		LANGLET, 1927*a*.

[1]) This number was determined from 24 prochromosomes.
[2]) GUIGNARD found > 30 chromosomes in the fertilized egg cell.

RANUNCULACEAE (continued)	n	2n	
Nigella (continued)			
Nigella damascena var. *flor. plen.* „Miss Jekyll". .		12	LANGLET, 1917*a*.
„ *damascena* L. var. *genuina* BRIQ.		12	HOCQUETTE, 1922
„ *diversifolia*.			LANGLET, 1927*a*.
„ *garidella*		12	„ „
„ *hispanica*	6		„ „
„ *nigellastrum* WILLK. . (*Garidella nigellastrum*)		12	HOCQUETTE, 1922.
„ *orientalis*	6		LANGLET, 1927*a*.
„ *sativa* L..		12	HOCQUETTE, 1922.
„ *sativa*	6		LANGLET, 1927*a*.
„ *viridis*.		12	FRANCK, 1911.
Leptopyrum fumarioides . . .		14	LANGLET, 1927*a*.
Actaea spicata.		16	„ „
Cimicifuga cimicifuga		16	„ „
„ *simplex* (?)		14	„ „
Aquilegia atropurpurea		14	„ „
„ *chrysantha*	7		SKALINSKA, 1928.
„ *haylodgensis* HORT. .		14	LANGLET, 1927*a*.
„ *vulgaris*	7		WINGE, 1925.
„ *vulgaris* var. *parviflora*		14	LANGLET, 1927*a*.
„ *vulgaris* × *A. chrysantha*	7		SKALINSKA, 1928.
Delphinium Ajacis	12		OVERTON, E., 1893*a*, *b*; OSTERWALDER, 1898; VON BOENICKE, 1911.
	8	16	TJEBBES, 1927.
		16	LANGLET, 1927*a*.
Delphinium belladonna HORT. .		48	„ „
„ *cardiopetalum* L. .	8		TJEBBES, 1928.
„ *chinense*.		16	LANGLET, 1927*a*.
„ *consolida* L. . . .		16	HOCQUETTE, 1922; LANGLET, 1927*a*.
„ *consolida*	8		TJEBBES, 1927.
„ *fissum* WALDST et „ KIT.		32	HOCQUETTE, 1922.
„ *hybridum* HORT. .		32	LANGLET, 1927*a*.
„ *nudicaule*	8		TJEBBES, 1927.
„ *orientale* var. (?) . ca.	8		BECKMAN, 1928.
„ *speciosum*		16	LANGLET, 1927*a*.
„ *staphysagria* L.. .		16	HOCQUETTE, 1922.

RANUNCULACEAE (continued)	n	2n	
Delphinium (continued)			
Delphinium staphysagria . . .		32	LANGLET, 1927*a*.
„ *truncatum*		32	„ „
Aconitum Californicum . . .		32	LANGLET, 1927*a*.
„ *Delavayi*.		32	„ „
„ *exelsum*		16	„ „
„ *Kusnetzoffii*		32	„ „
„ *napellus*	12	ca. 24	OVERTON, E., 1893*a*, *b*, 1894.
	12		OSTERWALDER, 1898.
		24	LANGLET, 1927*a*.
„ *paniculatum*		32	„ „
„ *septentrionale*. . . .		16	„ „
„ Spark's var.		24	„ „
„ *variegatum*.		24	„ „
„ *vulparia*		16	„ „
„ *Wilsonii*.		ca. 64	„ „
„ *sp.* (from Kamtschatka)		16	„ „
Anemone blanda		16	„ „
„ *hepatica* var. *Alb.-ros.*		14	„ „
„ *hepatica* var. *candida*.		14	„ „
„ *hepatica* var. *multiloba*		28	„
„ *hepatica* var. *rubr. plen.*		14	„ „
„ *hupehensis*		16	„ „
„ *japonica* S. et Z. . .	8		TAKAMINE, 1916.
Anemone montana		16	LANGLET, 1927*a*.
„ *multifida*.		32	„ „
„ *narcissiflora*	ca. 7–8		„ „
„ *nemorosa*.	12		WINGE, 1917.
„ *pratensis*		16	LANGLET, 1927*a*.
„ *rupicola*		32	„ „
„ *silvestris*		16	„ „
„ *silvestris* var. *flor. plen.*		16	„ „
Clematis Jackmanni HORT. . .		16	„ „
„ *ochotensis*.		16	„ „
„ *paniculata*		16	„ „
„ *recta*.		16	GUIGNARD, 1885; LANGLET, 1927*a*.
„ *stans*.		16	„ „
„ *Hendersonii* HORT.. . (= *C. integrifolia* × *C. viticella*)		16	„ „

RANUNCULACEAE (Continued)	n	2n	
Myosurus minimus L.	8		MANN, 1892.
		16	HOCQUETTE, 1922.
Trautwetteria palmata.		28	LANGLET, 1927*a*.
Ranunculus abortivus.		16	„ „
„ *aconitifolius* . . .		16	„ „
„ *acris* L. (normal race)		12 [1])	SOROKIN, 1924, 1927*b*.
„ *acris* L. (Gynodimorphic races) .		13, 14, 15, 18[2])	SOROKIN, 1924.
„ *acris* L. (Gynodimorphic race) . .		18 [3])	„ 1927*b*.
„ *acris* L. (n = 18) × (n = 12). . .		12, 13, 15–17	„ „
„ *acris* L.	7 [4])		„ 1927*a*, 1927*c*.
		14 [5])	„ 1927*d*; LANGLET, 1927*a*.
	7 [6])	14	SENJANINOVA, 1926.
		29–32[7])	„ „
„ *acris* var. *femina* .	7	14	LANGLET, 1927*a*.
„ *acris* var. *flor. plen*		14	„ „
„ *acris* L. var. . . . *Stevenii* REGEL .		14	MIYAJI, 1927*a*; LANGLET, 1927*a*.
„ *acris* L. subsp' *boreauanus* (JORD) ROUY et FOUC. .		16	HOCQUETTE, 1922.
Ranunculus alpestris.		16	LANGLET, 1927*a*.
„ *amplexicaulis*. . .		16	„ „
„ *anemonaefolius* . .		24	„ „

[1]) Plants of the normal race of *R. acris* collected in Europe were found to have 2n = 12 chromosomes by SOROKIN (1924) and this was confirmed in 1927 SOROKIN, 1927*b*).

[2]) Gymnodimorphic races were found to have 13, 14, 15 and 18 chromosomes (SOROKIN 1924).

[3]) The gynodimorphic race with 2n = 18 was used in crosses with the normal race (2n = 12) and produced progeny with 12, 13, 15, 16 and 17 chromosomes having different formulae (SOROKIN, 1927*b*).

[4]) SOROKIN (1927*a*) reported (n = 7) for a form from the New York Bot. Gard. The chromosomes were classified according to size and form, giving the formula 2 (A + B + c + c′ + d + e + f).

[5]) SOROKIN (1927*d*) reported that the most common formula of the common form from a number of localities was 2 (A + B + C + c + d″ + e + f).

[6]) One chromosome was called a heterochromosome, as it may have either a large or a small satellite.

[7]) This is considered to be a tetraploid race (2n = 28), the extra chromosomes probably being the result of early splitting of several of the chromosomes.

RANUNCULACEAE (continued)	n	2n	
Ranunculus (continued)			
Ranunculus arvensis		32	LANGLET, 1927*a*.
„ *asiaticus „superbus* HORT.		16	„ „
„ *bulbosus*		16	„ „
„ *bulbosus* var. *femina*		16	„ „
„ *bulbosus* var. *flor. plen.*		16	„ „
„ *bulbosus* L. subsp. *eu-bulbosus* BRIQ. var. *bulbifer* (JORD.) BRIQ. . .		16	HOCQUETTE, 1922.
„ *bulbosus* subsp. *eu-bulbosus* var. *bulbifer* fa. *foliis albo maculatis*		16	„ „
„ *carpaticus*		14	LANGLET, 1927*a*.
„ *caucasicus*		16	„ „
„ *cymbalaria* . . .		16	„ „
„ *ficaria* (*Ficaria verna*)		24	WINKLER, 1926.
„ *ficaria* (*Ficaria ranunculoides* ROTH)	ca. 6		SOUÈGES, 1913.
„ *ficaria*.		32	LANGLET, 1927*a*.
„ *ficaria* L. subsp. *euficaria* BRIQ. .		32	HOCQUETTE, 1922.
„ *ficaria* var. *flor. plen.*.		16	LANGLET, 1927*a*.
„ *ficaria* var. *ochroleuca*		32	„ „
„ *flammula*		32	„ „
„ *graminifolius*. . .		16	„ „
„ *illyricus*		32	„ „
„ *lanuginosus* var. *flor. plen.*. . . .		14	„ „
„ *muricatus*		48	„ „
„ *nyssanus*		16	„ „
„ *ophioglossifolius* .		16	„ „
„ *parviflorus* . . .		28	„ „
„ *platanifolius* . . .		14	„ „
„ *repens*.		12	MARCHAL, 1920.
		32	LANGLET, 1927*a*.

RANUNCULACEAE (continued)	n	2n	
Ranunculus (continued)			
Ranunculus repens var. *flor. plen.*		32	LANGLET, 1927*a*.
„ *repens* var. *typicus* BECK.		32	HOCQUETTE, 1922.
„ *reptans*		8	LIEHR 1916.
		32	LANGLET, 1927*a*.
„ *serbicus*		24	„ „
„ *Sommieri*		24	„ „
„ *trachycarpus* . . .		32	„ „
„ *trilobus*		48	„ „
„ *velutinus*.		14	„ „
Batrachium hederaceum. . . .		16	„ „
„ *marinum*.		32	„ „
„ *paucistamineum*. .		16	„ „
THALICTRUM [1])			
Section Camptonota			
1. Rotundifolia			
Thalictrum javanicum BLUME .		42	KUHN, 1928*a*.
2. Petaloidea			
Thalictrum anemonoides MICHX		42 [2])	KUHN, 1928*a*.
„ *aquilegifolium*. . .		14 & 28[3])	LANGLET, 1927*a*, *b*.
„ *aquilegifolium* L. [4]).	7	14 & 28[5])	KUHN, 1928*a*.
„ *aquilegifolium* var. *atropurpureum* . .		14	„ „
„ *aquilegifolim „hybridum"* HORT. .		28	LANGLET, 1927*a*.
„ *orientale* BOISS. . .		42	KUHN, 1928*a*.
„ *petaloideum* L. . .		14	„ „
„ *tuberosum* L. . . .		28	„ „
Section Camptogastra			
3. Sparsiflora			
Thalictrum Przewalskii		70	LANGLET, 1927*a*.
„ *Przewalskii* MAXIM.		14	KUHN, 1928*a*.
„ *sparsiflorum* TURCZ.		42	„ „
„ *squarrosum* STEPHAN [6])		42	„ „
4. Makrocarpa			
Thalictrum calabricum SPRENG [4])		42 [7])	„ „

[1]) Classification into sections is according to ENGLER & PRANTL.
[2]) Frequently a smaller number (35—37) was found.
[3]) „Disomatic" nuclei with 26 chromosomes (thought to be 28 with 2 drawn away by the knife in sectioning) were also found in the root-tips.
[4]) Plants from two different sources were studied.
[5]) Disomatic regions were recognizable in the root-tips.
[6]) Plants from three different sources were studied.
[7]) Frequently 43 or 44 chromosomes were counted.

RANUNCULACEAE (continued)	n	2n	
THALICTRUM (Continued)			
Section Camptogastra (continued)			
5. Platycarpa			
Thalictrum chelidonii DC. . . .		42	KUHN, 1928*a*.
„ *cultiatum* WALL. .		42	„ „
6. Podocarpa			
Thalictrum Fendleri		28	LANGLET, 1927*a*.
„ *Fendleri* ENGELM.[1])	14	28	KUHN, 1928*a*.
7. Dioica			
Thalictrum corynellum DC. [1]) .		28	KUHN, 1928*a*.
„ *dioicum* L.		42	„ „
„ *purpurascens* . . .		24	OVERTON, J. B., 1904, 1905.
	12		STRASBURGER, 1904*b*; OVERTON, J. B., 1909.
		42	LANGLET, 1927*a*.
„ *purpurascens* L.. .	12	24	KUHN, 1928*a*.
8. Flexuosa			
Thalictrum bulgaricum VELEN.		28	KUHN, 1928*a*.
„ *elatum* JACQ. . . .		28	„ „
„ *flavum*		84	LANGLET, 1927*a*.
„ *flavum* L. [1]). . . .		84	KUHN, 1928*a*.
„ *flexuosum* BERNH.[2])	21	42	„ „
„ *glaucum*		28	LANGLET, 1927*a*.
„ *glaucum* DESF. . .		28	KUHN, 1928*a*.
„ *foetidum*		14	LANGLET. 1927*a*.
„ *foetidum* L. [1]) . . .		14	KUHN, 1928*a*.
„ *galioides* NESTL. .		28	„ „
„ *lucidum* L. [3]) . . .	14	28	„ „
„ *montanum* WALLR.	7	14	„ „
„ *simplex*		56	LANGLET, 1927*a*.
„ *rariflorum*		56, 112	„ „
„ *simplex (rariflorum)*		56, 112	„ „ *b*.
„ *simplex* L. [4]) . . .	28	56	KUHN, 1928*a*.
„ *simplex* L. [5]) . . .	35	70	„ „
„ *Kemense*		70	LANGLET, 1927*a*.

[1]) Plants from two different sources were studied.

[2]) Plants from six different sources and under the names *saxatile*, *minus*, *purpuras cens*, *minus* × *medium* and *flexuosum*, were all considered to be *Th. flexuosum* BERNH. and were found to have the same chromosome number.

[3]) Plants from three different sources were studied.

[4]) Plants from four different sources were studied. Those under the names var. *amurensis* from Leningrad were found to have n = 28.

[5]) Others under the names *Kemense*, var. *dubium* and *simplex* were found to have n = 35.

RANUNCULACEAE (continued)	n	2n	
THALICTRUM (continued)			
Section (?) [1])			
Thalictrum alpinum		14	LANGLET, 1927*a*.
„ *angustifolium* . . .		28	„ „
„ *banaticum* (ROCHEL?) . . .		42	KUHN, 1928*a*.
„ *calabricum*		42	LANGLET, 1927*a*.
„ *confine* FERNALD .		42	KUHN, 1928*a*.
„ (*cornuti*?)		42	LANGLET, 1927*a*.
„ *Delavayi*		42	„ „
„ *Delavayi* FRANCH. .		42	KUHN, 1928*a*.
„ *dipterocarpum*. . .		28	LANGLET, 1927*a*.
„ *dipterocarpum* FRANCH.		28	KUHN, 1928*a*.
„ *exaltatum*.		28, 35	„ „
„ *lucidum*		28	LANGLET, 1927*a*.
„ *lucidum* var. *laserpitiifolium*. . . .		28	„ „
„ *maximum* (?) . . .		42	KUHN, 1928*a*.
„ (*Mediterraneum*?) .		28	LANGLET, 1927*a*.
„ *medium* JACQ. . .		28	„ „
„ *minus*		12	OVERTON, J. B., 1909.
		42	LANGLET, 1927*a*.
„ *minus Kochii* . . .		42	„ „
„ *minus odoratum* . .		42	„ „
„ *minus* L. subsp. *dunense* (DUMORT) ROUY et FOUC. .		48	HOCQUETTE, 1922.
„ (*pauciflorum*?) . .		42	LANGLET, 1927*a*.
„ (*rubellum*?)		42	„ „
„ *rufinerve* LEJ. et COURT		28	KUHN, 1928*a*.
„ *rugosum* AIT. . . .		28	„ „
„ *sp*.		35	LANGLET, 1927*a*.
„ *flexuosum* BERNH. × *Th. simplex* L. (?)		47	KUHN, 1928*a*.
Adonis aestivalis.		32	LANGLET, 1927*a*.
„ *apennina*		16	„ „
„ *autumnalis*.		32	„ „
„ *dahurica*	12		ISHIKAWA, 1916; TAKAMINE, 1916.
		24	LANGLET, 1927*a*.

[1]) The following species were not classified under sections.

RANUNCULACEAE (continued)	n	2n	
Adonis (continued)			
Adonis flammea	16		LANGLET, 1927*a*.
„ *pyrenaica*	8		„ „
„ *vernalis*	8		„ „
„ *volgensis* × *A. vernalis* .		16	„ „
LARDIZABALACEAE			
Akebia lobata	16		(KUWADA, 1916), given by ISHIKAWA, 1916.
„ *quinata* D.C.	16	32	VELSER, 1913.
„ *quinata*	16		KUWADA, given by ISHIKAWA, 1916.
Lardizabala biternata		28	LANGLET, 1928.
BERBERIDACEAE			
Podophyllum Emodi		12 [1]	DE LITARDIÈRE, 1921; LANGLET, 1928.
„ *Leichtlinii* . . .		12	LANGLET, 1928.
„ *peltatum* L. . . .	8 [2]	16	MOTTIER, 1897, 1905 [3].
	8		OVERTON, J. B., 1905, 1922.
	6		LUBLINER, 1925.
		12	DE LITARDIÈRE, 1921.
	6	12	KAUFMANN, 1926.
		14	RICHARDS, 1909.
Jeffersonia binata (diphylla) .		12	LANGLET, 1928.
„ *dubia* [4]		12	„ „
Diphylleia cymosa		12	„ „
Nandina domestica.		20	„ „
Epimedium macranthum . . .		12	„ „
„ *Musschinianum*. .		12	„ „
„ *pinnatum*		12	DE LITARDIÈRE, 1921; LANGLET, 1928.
„ *rubrum*		12	LANGLET, 1928.
Vancouveria (Epimedium) hexandra		12	„ „
Caulophyllum (Leontice) thalictroides		16	„ „
Berberis (Mahonia) aquifolium.	14		TISCHLER, 1928*b*.
„ *buxifolia*	28		„ „

[1]) One root was found by LANGLET to have disomatic cells with 2n = 24.
[2]) In 1897 MOTTIER found 6 chromosomes in several cases but it was thought that in sectioning the knife might have displaced 2 chromosomes. In 1905 OVERTON accepted n = 8 as correct.
[3]) In previous list, GAISER (1926), this reference was erroneously given as MOTTIER (1907).
[4]) This species is marked by the presence of a pair of satellites.

BERBERIDACEAE (continued)	n	2n	
Berberis (continued)			
Berberis Darwinii	14		HIMMELBAUR, 1912; TISCHLER 1927*a*, 1928*b*.
„ *empetrifolia*	14		HIMMELBAUR, 1912; TISCHLER, 1927*a*, 1928*b*.
„ (*empetrifolia* × *Darwinii*)	14		HIMMELBAUR, 1912.
„ *integerrima*	14		TISCHLER, 1928*b*.
„ (*Mahonia*) *japonica* .	14		„ „
„ (*Mahonia*) *repens* . .	14		„ „
„ *stenophylla* HORT. . . (= *B. empetrifolia* × *B. Darwinii*). . . .	14		„ 1927*a*.
„ *Thunbergii*	14		„ 1928*b*.
„ *Veitchii*.	14		„ „
„ sp. (verna)		28	LANGLET, 1928.
„ *vulgaris*.	14		TISCHLER, 1928*b*.
MENISPERMACEAE			
Menispermum canadense . . .		52–54	LANGLET, 1928.
„ *dahuricum* . . .		52–54	„ „
MAGNOLIACEAE			
Magnolia denudata (= *obovata*)	ca. 48		ANDREWS, 1901.
„ *obovata*	> 50		WEFELSCHEID, 1911.
„ *foetida* (= *grandiflora*).	57(?)		YAMAKAWA, 1916 (given by ISHIKAWA, 1916).
„ *Kobus*.	19		YAMAKAWA, 1916 (given by ISHIKAWA, 1916).
„ *parviflora*	19		YAMAKAWA, 1916 (given by ISHIKAWA, 1916).
„ *precia* (= *Yulan*) . .	ca. 40		GUIGNARD, 1897.
„ *Youlan*	> 50		WEFELSCHEID, 1911.
„ *tripetala*	ca. 45		FARR, 1918.
„ *virginiana* L. . . .	19		MANEVAL, 1914.
„ *Lenneana* HORT. (= *precia* × *denudata*).	> 50		WEFELSCHEID, 1911.
„ *Soulangiana* HORT. (= *precia* × *denudata*)	ca. 40		GUIGNARD, 1897.
Liriodendron tulipifera L. . .	19		MANEVAL, 1914.
Drimys Winteri	ca. 36		STRASBURGER, 1905*a*.
LAURACEAE			
Cinnamomum Sieboldi	12		TÄCKHOLM & SÖDERBERG, 1917.

RHOEADALES	n	2n	
PAPAVERACEAE			
Chelidonium laciniatum	8		VON BOENICKE, 1911.
	6		MARCHAL, 1920.
„ *Maius* L.	8		VON BOENICKE, 1911.
„ *Maius*	6		WINGE, 1917; MARCHAL, 1920.
„ *Maius* var. *laciniatum*	6		WINGE, 1916.
Papaver nudicaule	7		LJUNDAHL, 1922, 1924.
„ *nudicaule* L.		14	YASSI, 1927.
„ *Rhoeas*	7		LJUNDAHL, 1922, 1924.
„ *Rhoeas* L.	7		TAHARA, 1915*e*; VILCINO & ABELE, 1927.
„ *somniferum*	11		LJUNDAHL, 1922.
„ *somniferum* L. . . .	11		YASUI, 1921.
„ *somniferum* L. var. *glabrum* BOIS. . . .		22	TAHARA, 1915*e*; YASUI, 1927.
„ *somniferum* L. var. *glabrum* BOIS. × *P. nudicaule* L. (F_1) . .	$6-8+\frac{12_I}{2}-\frac{10_I}{2}$	18	YASUI, 1927.
„ *somniferum* L. var. *glabrum* BOIS. × *P. nudicaule* L. (F_2) . .	$11+\frac{5_I}{2}-\frac{6_I}{2}-\frac{7_I}{2}$		YASUI, 1927.
„ *somniferum* L. var. *glabrum* BOIS. × *P. nudicaule* L.	11 [1]), $11+\frac{4_I}{2}$		YASUI, 1927.
Corydalis cava.	8		TISCHLER, 1928*b*.
„ *pumila*		ca. 16 [2])	NĚMEC, 1910*a*.
CAPPARIDACEAE			
Cleome gigantea . . . . . . :		ca. 70	UFER, 1927.
„ *paradoxa*.	16		TISCHLER, 1921–22.
„ *spinosa*		38	TAYLOR, 1925*c*.
	10		UFER, 1927.
„ *spinosa gigas*		ca. 38	UFER, 1927.
Capparis acutifolia SWEET. . .		ca. 85	KUHN, 1928*b*.
„ *cyanophallophora* L. .		18	„ „
„ *saligna* VAHL. . . .		30	KUHN, 1928*b*.

[1]) Out of 122 individuasl 82 had 11 bivalents, while of the remainder none had mor than 4 univalents.

[2]) The number varied from 12 to 20.

CAPPARIDACEAE (continued)	n	2n	
Capparis (continued)			
Capparis spinosa	12		SCHILLER, 1928.
„ *spinosa* L. var. *rupestris* SIBTH. et SM. .		38	KUHN, 1928*b*.
CRUCIFERAE			
Iberis amara L.	8		JARETZKY, 1928*b*.
„ *pinnata*.		16	LAIBACH, 1907.
Cochlearia alpina		28	CRANE & GAIRDNER, 1923.
„ *anglica*		49–50	„ „ „ „
„ *danica*		42	„ „ „ „
„ *micacea*		34–36	„ „ „ „
„ *officinalis*		28	„ „ „ „
„ *anglica* × *C. officinalis*		39–40	„ „ „ „
„ *danica* × *C. officinalis*		35–36	„ „ „ „
„ *officinalis* × *C. anglica*.		39–40	„ „ „ „
„ *officinalis* × *C. danica*		35	„ „ „ „
Alliaria officinalis	ca. 18–20		WINGE, 1917.
Sisymbrium strictissimum. . .	8		LAIBACH, 1907.
Sinapis alba L.		18	KARPECHENKO, 1924*a* [1]).
„ *arvensis* L.		24	„ 1924*a* [1]).
„ *dissecta* LAG..		24	„ 1924*a* [1]).
Brassica alboglabra BAILEY . .		18	„ 1928.
„ *campestris* L.	10	16–20	TAKAMINE, 1916.
	10		MORINAGA, 1928.
		20	KARPECHENKO, 1928.
„ *campestris* L. f. „*Aburana Tohkowase*" . .	10		SHIMOTOMAI, 1925.
„ *campestris* L. var. *dentata* MATSUM. et NAKAI „Santona" . . .	10		SHIMOTOMAI, 1925.
„ *cernua*	18		MORINAGA, 1928.
„ *cernua* HENSL. „Karashina"	18		SHIMOTOMAI, 1925.
„ *chinensis* L.		20	KARPECHENKO, 1924*a* [1]).
„ *chinensis* L. „Shakushina"	10		SHIMOTOMAI, 1925.
„ *chinensis*	10		MORINAGA, 1928.
	10	20	TERASAWA & SHIMOTOMAI, 1928

[1]) In previous list, GAISER (1926) this reference was incorrectly given as KARPECHENKO (1922—3). This is true throughout the Cruciferae wherever KARPECHENKO (1922—3) appeared.

CRUCIFERAE (continued)	n	2n	
Brassica (continued)			
Brassica japonica SIEB. „Mizuna".	10		SHIMOTOMAI, 1925.
„ *japonica*	10		MORINAGA, 1928.
„ *juncea* Coss. „Okarashi"	18		SHIMOTOMAI, 1925.
„ *juncea*	18		MORINAGA, 1928; TERASAWA & SHIMOTOMAI, 1928.
„ *juncea* (?) (Southern curled)		36	KARPECHENKO, 1924*a*.
„ *juncea* CZERN. var. *seminibus fuscis* BATAL		36	KARPECHENKO, 1924*a*.
„ *montana* P.		18 [1]), 19–20	NETROUFAL, 1927.
„ *montana* (cultivated races)		18 [2]), 19–21	„ „
„ *napus*	10		GALLÁSTEGUI, 1926.
„ *napus* L.	16		LAIBACH, 1907.
	18		SHIMOTOMAI, 1925.
		36	KARPECHENKO, 1928.
„ *napus* L. var. *esculenta* DC.		36	„ 1924*a*.
„ *napus* L. var. *oleifera hyemalis* „DOLL" . .		36	„ 1924*a*.
„ *napella* CHAIX . .	19		MORINAGA, 1928.
„ *oleracea* L.	9		WINGE, 1925.
„ *oleracea* L. var. *acephala* DC. „Baumkohl, blauer". . . .		18	KARPECHENKO, 1924*a*.
„ *oleracea* L. var. *acephala* DC. „Habotan"	9		SHIMOTOMAI, 1925.
„ *oleracea* L. var. *acephala* DC. „Mosbacher"		18	KARPECHENKO, 1924*a*.
„ *oleracea* L. var. *acephala* DC. „Tronchuda".		18	„ „
„ *oleracea* var. *acephala*	9		GALLÁSTEGUI, 1926.
„ *oleracea* L. var. *botrytis* L. sub. var. *cauliflora* GARS.		18	KARPECHENKO, 1924*a*.

[1]) 85% of the cells examined showed 18 chromosomes. Of the remainder only one metaphase plate had 20—21 chromosomes.
[2]) Counts of 18 and > 18 (i.e. 19—20, 21) were in proportion of 95% to 4%.

CRUCIFERAE (continued)	n	2n	
Brassica (continued)			
Brassica oleracea L. var. *capitata* L.		18	KARPECHENKO, 1924*b*.
„ *oleracea* L. var. *capitata* I. f. *alba* (LAM.) DC.		18–21[1])	NETROUFAL, 1927.
„ *oleracea* L. var. *capitata* „Tamana". . .	9		SHIMOTOMAI, 1925.
„ *oleracea* var. *capitata* .	9		GALLÁSTEGUI, 1926.
„ *oleracea* L. var. *gemmifera* DC.		18	KARPECHENKO, 1924*a*.
„ *oleracea* L. var. *gemmifera* ZENK. „Komochitamana". . .	9		SHIMOTOMAI, 1925.
„ *oleracea* L. var. *gongyloides* L.		18	KARPECHENKO, 1924*a*.
„ *oleracea* L. var. *Sabauda* L.	9	18	„ 1924*a*.
		18	„ 1924*b*.
		18–21[1])	NETROUFAL, 1927.
„ *oleracea* L. prol. *napus* L. var. *hongnoensis* LEVEILLE 1912. . .		18	KARPECHENKO, 1924*a*'
„ *oleracea* (nabicol) . .		18	GALLÁSTEGUI, 1926.
„ *pekinensis*	10		MORINAGA, 1928.
„ *pekinensis* RUPR. (= *B. Petsai* BAILEY f. CHOSENHAKUSAI) . .	10		SHIMOTOMAI, 1925.
„ *campestris* × *B. juncea* F_1	$10+\frac{8_1}{2}$ [2])		TERASAWA & SHIMOTOMAI, 1928
„ *cernua* × *B. chinensis*	$10+\frac{8_1}{2}$		MORINAGA, 1928.
„ *cernua* × *B. japonica*.	$10+\frac{8_1}{2}$		„ „
„ *cernua* × *B. Rapa* . .	$10+\frac{8_1}{2}$		„ „
„ *chinensis* × *B. Napella*	$10+\frac{9_1}{2}$		„ „
„ *chinensis* × *B. pekinensis*.	10		„ „

[1]) A single plate was seen in each case showing ca. 38 chromosomes.
[2]) In the homoeotypic division, after univalents have divided, 16—22 chromosomes appeared on the plates.

CRUCIFERAE (continued)	n	2n	
Brassica (continued)			
Brassica japonica × *B. pekinensis*	10		MORINAGA 1928.
„ *japonica* × *B. Rapa*	10		„ „
„ *juncea* × *B. pekinensis*	$10+8_1$ $\overline{2}$		„ „
„ *Napella* × *B. chinensis*	$10+9_1$ $\overline{2}$		„ „
„ *Napella* × *B. japonica*	$10+9_1$ $\overline{2}$		„ „
„ *Napella* × *B. pekinensis*	$10+9_1$ $\overline{2}$		„ „
„ *Napella* × *B. Rapa*	$10+9_1$ $\overline{2}$		„ „
„ *pekinensis* × *B. japonica*	10		MORINAGA, 1928; TERASAWA & SHIMOTOMAI, 1928.
„ *pekinensis* × *B. Napella*	$10+9_1$ $\overline{2}$		MORINAGA, 1928.
„ *pekinensis* × *B. Rapa*	10		„ „
„ *Rapa* × *B. chinensis*	10		„ „
„ *Rapa* × *B. juncea* .×	$10+8_1$ $\overline{2}$		„ „
„ *Rapa* × *B. Napella*	$10+9_1$ $\overline{2}$		„ „
„ *Rapa* × *B. pekinensis*	10		„ „
„ *chinensis* × *Raphanus sativus* F_1	28_1 [1] $\overline{2}$		TERASAWA & SHIMOTOMAI, 1928
„ *chinensis* × *Raphanus sativus* F_2		17–18, 20, 22–25, 33–35	TERASAWA & SHIMOTOMAI, 1928
„ *chinensis* × *Raphanus sativus* F_3		21–24, 26, 30, 31, 34, 36, 44	TERASAWA & SHIMOTOMAI, 1928
Raphanus raphanistrum L.		18	KARPECHENKO, 1924*a*, 1928.
„ *sativus*	16		KLEINMAN, 1923.
		18	TERASAWA & SHIMOTOMAI, 1928

[1]) Usually all chromosomes appeared unpaired in the heterotypic dividision.

CRUCIFERAE (continued)	n	2n		
Raphanus (continued)				
Raphanus sativus L.	9	18	KARPECHENKO,	1924*b*.
		18	„	1928.
„ *sativus* L. prol. *niger* PERS.		18	„	1924*a*.
„ *sativus* L. prol. *oleiferus* METZG. . . .		18	„	1924*a*.
„ *sativus* L. prol. *radicula* PERS.		19	„	1924*a*.
„ *sativus* × *Brassica oleracea* F_1 (sterile)[1])	$\frac{18_I}{2}$	18	„	1927*a*.
„ *sativus* × *Brassica oleracea* F_1 (fertile) [2])	$\frac{18_I}{2}$, $\frac{19_I-20_I}{2}$ $\frac{36_I}{2}$, $\frac{35_I-32_I}{2}$	18	„	1927*a*.
„ *sativus* × *Brassica oleracea* F_1 × *Raphanus sativus* . .		27, 28–29	„	1927*a*.
„ *sativus* × *Brassica oleracea* F_2 [3]) . . .		27 or 27–29, 36 or 36–38, 45 or 40–42, 51-53	„	1927*a*.
„ *sativus* × *Brassica oleracea* F_1	$\frac{18_I}{2}$ [4])	18	„	1928.
„ *sativus* × *Brassica oleracea* F_2 (triploid)	$9+\frac{9_I}{2}$ [5])	27	„	1928.

[1]) As these hybrids in 1923 were sterile it was assumed that gametes formed with 9 or ca. 9 chromosomes played no part in the production of offspring.

[2]) Investigations made in 1924 when these same hybrids showed partial fertility when cultivated along with *Raphanus* and *Brassica* plants gave evidence of increased chromosome number and possible formation of polyploid gametes.

[3]) As no progeny showed increase of cabbage characters, it was assumed that crosses with cabbage did not take place but rather with *Raphanus*.

[4]) Instead of tetrads, groups of cells containing from 6 to 12 chromosomes formed.

[5]) Meiotic division was very irregular, the first division of chromosomes being sometimes entirely omitted. One set each of *Raphanus* and *Brassica* chromosomes supposedly form 9 bivalents + extra *Raphanus*.

CRUCIFERAE (continued)	n	2n	
Raphanus (continued)			
Raphanus sativus × *Brassica oleracea* F_2 (tetraploid)	18 [1]	36	KARPECHENKO, 1928.
„ *sativus* × *Brassica oleracea* F_2 (pentaploid)	$9+\frac{27_{I}}{2}$ [2]	45	„ „
„ *sativus* × *Brassica oleracea* F_2 (hypohexaploid)	25, 27, ca. 31 [3]	51	„ „
„ *sativus* × *Brassica oleracea* F_2 (hypertriploid)	19 [4]	29	„ „
„ *sativus* × *Brassica oleracea* F_2 (hypopentaploid). . . .	23 [5]	41	„ „
„ × *sativusBrassica oleracea* F_2 (Hybrid 7–13)	19, 20	36	„ „
„ *sativus* × *Brassica oleracea* F_2 (Hybrid 7–150)	19	36	„ „
„ *sativus* × *Brassica oleracea* (triploids inter se)		18–24 [6]	„ „
„ *sativus* × *Brassica oleracea* (triploid × *Raphanus sativus* .		18	„ „
„ *sativus* × *Brassica oleracea* (tetraploids inter se)		36	„ „

[1]) Divisions were regular, two sets each of *Raphanus* and *Brassica* forming 18 bivalents.

[2]) Two sets of *Raphanus* chromosomes were considered to have formed 9 bivalents, while the third set of Raphanus + the two sets of *Brassica* chromosomes formed the 27 univalents.

[3]) It is supposed that two sets of *Raphanus* + 2 sets of *Brassica* chromosomes formed 18 bivalents and the remainder, perhaps 9 of *Brassica* + 6 of *Raphanus*, formed 15 univalents.

[4]) It is assumed that this complex was formed from a *Raphanus* gamete (n = 9) and an F_1 gamete with 20 chromosomes = 10B + 10R.

[5]) The character of meiosis remained the same as in the pentaploid but with less univalents.

[6]) The majority had 18 chromosomes.

CRUCIFERAE (continued)	n	2n	
Raphanus (continued)			
Raphanus sativus × *Brassica oleracea* (hypohexaploid progeny) . .		40–43	KARPECHENKO, 1928.
„ *sativus* × *Brassica oleracea* (hypopentaploid)		39–41	„ „
„ *sativus* × *Brassica oleracea* (triploid × hypohexaploid = hypoenneaploid) .		78	„ „
„ *sativus radicula* × *Brassica oleracea capitata* f. *rubra* F . .	$4\text{–}8+\frac{10_{I}}{2}\text{–}\frac{2_{I}}{2}$, 10–18 [1])	18	PIECH & MOLDENHAWER, 1927.
Lunaria annua (= *biennis*) . .		24	LAIBACH, 1907.
Capsella (= *Bursa*) *bursa pastoris*.	16		„ „
		32	ROSENBERG, 1904*b*.
Bursa bursa-pastoris (L.) BRITTON.	16	32	HILL, 1927.
	16		„ given by SHULL, 1929.
„ *bursa-pastoris apetala* OPIZ	16		„ 1927; HILL given by SHULL, 1929.
„ *djurdjurae* SHULL . . .	16		HILL, given by SHULL, 1929.
„ *grandiflora* BOIS. . . .	8	16	„ 1927.
	8		„ given by SHULL, 1929.
Capsella Heegeri.	16		MARCHAL, 1920.
„ *Heegeri* SOLMS-LAUBACH	16		HILL, given by SHULL, 1929.
Bursa occidentalis SHULL . . .	16		„ 1927; HILL, given by SHULL, 1929.
„ *occidentalis* subsp. *Madeirae* SHULL	16		HILL, given by SHULL, 1929.
„ *orientalis* SHULL	16		„ 1927; HILL, given by SHULL, 1929.
„ *rubella* REUT.	8		HILL, 1927; HILL, given by SHULL, 1929.
„ *tuscaloosae* SHULL . . .	8		HILL, 1927; HILL, given by SHULL, 1929.

[1]) In interkinesis the chromosome number is usually 13—15 but may vary from 10—18.

CRUCIFERAE (Continued)	n	2n	
Capsella (= Bursa) *Viguieri* .	8		MARCHAL, 1920.
Bursa Viguieri BLARINGHEM .	8		HILL, 1927; HILL, given by SHULL, 1929.
Camelina sativa L. CRANTZ subsp. *Alyssum* (MILLER) . . THELLUNG	21 [1])		JARETZKY, 1928*a*.
Neslia paniculata DESV. . . .	7		„ „
Draba alpina L.	probably 32		HEILBORN, 1927.
„ *borealis* DC. [2])	40		„ „
„ *cacuminum* ELIS. EKM. .	ca. 30		„ „
„ *condensata* (LANGE) [3]) .	32		„ „
„ *daurica* DC.	16		JARETZKY, 1928*b*.
„ *fladnizensis* WULF. . .	8		HEILBORN, 1927.
„ *incana* L.	16		„ „
Draba incana L. f. *hebecarpa* LINDBL. [4])	16		HEILBORN, 1927.
„ *Magellanica* LAM. subsp. *borea* ELIS. EKM. [5]) . .	32		„ „
„ *Magellanica* LAM. subsp. *borea* ELIS. EKM. var. *lutescens* ELIS. EKM. .	32		„ „
„ *Magellanica* LAM. subsp. subsp. *cinera* (ADAMS) ELIS. EKM.	40		„ „
„ *Magellanica* LAM. subsp. *cinera* (ADAMS) ELIS. EKM. var. *dovrensis* (F$_1$ ELIS. EKM.	32		„ „
„ *Magellanica* LAM. subsp. *cinera* (ADAMS) ELIS. EKM. var. *brachysili-qua* (MELA) ELIS. EKM.	24		„ „
„ *Magellanica*.	32 [6])		„ (1926), 1929.
	40 [7])		„ „ „
	24 [8])		„ „ „

[1]) Considerable irregularity in the heterotypic division was found.
[2]) This plant is considered as belonging to the *D. unalaschkiana* group.
[3]) This is a „condensata"-form of *D. Magellanica borea.*
[4]) Plants from two different regions were examined.
[5]) Specimens from three different places were examined.
[6]) Most of the forms of *D. Magellanica* had 32 chromosomes.
[7]) Two forms of *D. Magellanica*, one from Spitzbergen and one from Greenland, had 40.
[8]) One form of *D. Magellanica* from Finland had 24 chromosomes.

CRUCIFERAE (continued)	n	2n	
Draba nivalis LILJEBL. . . .	8		HEILBORN, 1927.
Draba rupestris R. Br. LINDBL. f. *leiocarpa*.	24 [1])		„ „
„ *rupestris* R. Br. LINDBL. f. *hebecarpa*	24 [2])		„ „
„ *rupestris*	24		„ (1926), 1929.
„ cf. *unlaschkiana* DC. . .	40		„ 1927.
„ *fladnizensis* × *nivalis* (= *D. curtisiliqua* ZETT.)	8		„ „
Erophila cochleoides		12 [3])	BANNIER, 1923.
	7		WINGE, 1925, 1926.
„ *confertifolia*		24 [3])	BANNIER, 1923.
	15		WINGE, 1925, 1926.
„ *violacea-petiolata* . .		12 [3])	BANNIER, 1923.
	ca. 35		WINGE, 1925.
	32		„ „
Aubrietia Columnae GUSS. . .	8		JARETZKY, 1928*a*.
„ *deltoides* (L.) DC. . .	8		„ „
„ *edentula* BOISS. . . .	8		„ „
„ *Libanotica* BOISS. . .	8		„ „
Stenophragma Thalianum . .		10	LAIBACH, 1907, GRÉGOIRE 1912.
	5		WINGE, 1925.
„ *Thalianum* CELAK.	5		JARETZKY, 1928*a*.
Turritis glabra L.	16		„ „
Arabis albida STEV.	8		„ „
„ *alpina* L.	8		„ „
„ *bellidifolia* JACQ. . . .		16	„ „
„ *hirsuta* SCOP.	16		„ „
„ *muralis* BERTOLONI subsp. *collina* (TEN.) THELLUNG var. *rosea* DC. .	8		„ „
„ *procurrens* WALDST et KIT.	8		„ „
„ *pumila* WULF.	8		„ „
„ *sicula* HUET.	8		„ „
„ *turrita* L.	8		„ „
„ *sp.* (?)	16		„ „

[1]) In a second plant from another region, 22—25 chromosomes were counted, n = probably 24.

[2]) Plants from three different regions were examined.

[3]) In previous list, GAISER (1926), these numbers were incorrectly given in the haploid column.

CRUCIFERAE (continued)	n	2n	
Cordaminopsis Halleri (L.) HAYCK.	8		JARETZKY, 1928*a*.
Erysimum cheiranthoides L. . .	8		„ „
„ *helveticum* (JACQ.) DC.	24		„ „
„ *hieraciifolium* L. . .		ca. 32	„ „
„ *ochroleucum* DC. . .	ca. 16		„ „
„ *silvestre* (CRANTZ) . KERNER	24		„ „
Cheiranthus Cheiri L.	7	14	„ „
Alyssum Arduini (= *saxatile*) .	8	16	LAIBACH, 1907.
„ *Arduini* (= *saxatile* L.)	8		JARETZKY, 1928*a*.
„ *calycinum* L.	16		„ „
„ *corymbosum* GRIESEBACH	8		„ „
„ *edentulum* WALDST. et KIT.	8		„ „
„ *Murale* (argenteum) .	8	16	LAIBACH, 1907.
„ *Wierzbikii*	8	16	„ „
Clypeola Jonthlaspi L. subsp. *Glaudini* (TRACHSEL) THELLUNG	16		JARETZKY, 1928*a*.
Lobularia maritima L.	12		„ „
Berteroa incana DC.	8		„ „
Malcolmia africana	7		„ „
„ *maritima*	7		„ „
Hesperis matronalis L.	14		„ „
„ *tristis* L.	14		„ „
Matthiola incana	7	14	ALLEN, I. 1924; CORNER, 1927.
	7		JARETZKY, 1928*a*.
„ *incana* (mutants) . .	$7+1_1$ [1]		FROST & MANN, 1924.
	$7+2_1$ [2] $\overline{2}$		„ „ „ „ „
„ *incana* R.Br. „Snowflake"	7		FROST, 1927; LESLEY & FROST, 1928.
	7	14	LESLEY & FROST, 1927.
„ *incana* R.Br. (pure single variety). . .	7	14	„ „ „ „

[1] The trisomic mutants observed in 1924 were large, crenate and slender.

[2] The tetrasomic mutants observed in 1924 were large, slender, and large crenate. Extreme slender might be either trisomic or tetrasomic.

CRUCIFERAE (continued)	n	2n	
Matthiola (continued)			
Matthiola incana R. BR. var. „Snowflake" . . .	8 [1])		LESLEY & FROST, 1927.
„ *incana* R. BR. var. „Snowflake" (pure single variety) 7_1 & 7_2	$7+1_1$ [2])		„ „ „ „
„ *incana* R. BR. „Snow flake" (small) . . .	$7+1_1$		„ „ „ „
„ *incana* R. BR. „Snow-flake" (extremely small)	$7+\frac{2_1}{2}$		„ „ „ „
„ *incana* L. BR. „Snow-flake" (mutants) .	8 [3]), 9 [4]), 10 [5])		FROST, 1927.
Bunias erucago L.	7		JARETZKY, 1928*a*.
„ *orientalis* L.	7 S_3 [6])	42	„ „
Coringia orientalis (L.) . . . . DUMONT.	7		„ „
SARRACENIALES			
SARRACENIACEAE			
Sarracenia purpurea	12		SHREVE, 1906.
„ *rubra*.	12		NICHOLS, 1908.
„ *variolaris*	12		„ „
DROSERACEAE			
Drosera capensis.		36–38	HEITZ, 1926.
„ *filiformis*	10		LEVINE, 1916.
„ *longifolia*	20		ROSENBERG, 1904*a*.
	20	40	„ 1903, 1909*d*.
„ *pygmaea*		20–(22)	HEITZ, 1926.
„ *rotundifolia*	8		HUIE, 1897, 1899, PETERS, 1897, ROSENBERG, 1899.
	10		ROSENBERG, 1904*a*; PACE, 1912
	10	20	„ 1903, 1909*d*.

1) Mutant forms of variety „Snowflake" were found to be trisomic.

2) The first metaphase chromosomes of F_1 were short, and of the F_2, long.

3) The list of trisomic mutants in 1927 with $n + 1_1 = 8$ chromosomes was: Smooth, Crenate, Crenatoid (there was no cytological difference between the two latter), Narrow, Dark, Small, Small-Smooth, Slender, Large and Convex. In Small, Slender and Large the extra chromosome is evidently a fragment of a normal chromosome.

4) The mutants with $n + 2_1 = 9$ chromosomes were: Extreme Large and Extreme Smooth; and the mutants with $n + 1_1 + 1_1 = 9$ chromosomes were: Extreme Large, Large Slender, Crenate Slender, Crenate Large, and Large Smooth.

5) The one mutant with $n + 1_1 + 2_1 = 10$ chromosomes was Large Extreme Slender.

6) S_3 means „dreiwertige Sammelchromosomen", i.e., each is the equivalent of 3 somatic chromosomes.

DROSERACEAE (continued)	n	2n	
Drosera (continued)			
Drosera spatulata		ca. 72	HEITZ, 1926.
„ *rotundifolia* × *longifolia* (= *D. obovata*) .	$\frac{10+20}{2}$	30	ROSENBERG, 1903, 1904*a*, 1909*d*.
ROSALES			
PODOSTEMACEAE			
Podostemon subulatus GARDN. .		ca. 40	WENT, 1910.
Lawia zeylania TUL.	10		MAGNUS, 1913.
Oenone Imthurni	ca. 12–14		WENT, 1910.
„ *Versteegiana*	ca. 8		„ 1926.
Mourera fluviatilis.	ca. 14		„ 1910.
HYDROSTACHYACEAE			
Hydrostachys imbricatus . . .	10–12		PALM, 1915.
CRASSULACEAE			
Bryophyllum calycinum SALISB.		40(38?)	TAYLOR, 1926.
Penthorum sedoides L.	8		ROCÉN, 1928.
SAXIFRAGACEAE			
Saxifraga granulata	> 30		JUEL, 1907.
	16		SCHÜRHOFF, 1925*a*; MARSDEN-JONES & TURRILL, 1928.
„ *rosacea*	16		MARSDEN-JONES & TURILL, 1928.
„ *sponhemica*	ca. 15		PACE, 1912.
„ *rosacea* × *S. granulata* F_1	16		MARSDEN-JONES & TURRILLL, 1928.
„ *rosacea* × *S. granulata* F_2.	32 [1])		MARSDEN-JONES & TURRILL, 1928.
Parnassia palustris	10		PACE, 1912.
Francoa appendiculata	ca. 20		GAUMANN, 1919.
Philadelphus coronarius . .	10		V. D. ELST, 1909.
RIBES [2])			
Section B e r i s i a			
Ribes orientale ♀ DESF. [3]) . . .		16	MEURMAN, 1928.
„ *saxatile* ♂ PALL. [3]) . . .		16	„ „

[1]) Reduction divisions were very irregular.
[2]) MEURMAN does not state whose sectional classification he is using. It does not follow ENGLER & PRANTL. According to TISCHLER (1926) 1929 it follows SANCZEWSKI (1907).
[3]) MEURMAN found no evidence of heterochromosomes when carefully comparing the 8 pairs of chromosomes in these dioecious species.

SAXIFRAGACEAE (continued)	n	2n	
RIBES (continued)			
Section Ribesia.			
Subsection Symplocalyx			
Ribes aureum [1])	8		TISCHLER, 1927*a*, (1926), 1929.
„ *aureum* PURSH. [2]). . . .	8	16	„ 1927*b*; MEURMAN, 1928.
„ *aureum* var. *chrysococcum* RYDB..	8	16	MEURMAN, 1928.
„ *odoratum* WENDL. . .	8	16	„ „
Subsection Calobotrya			
Ribes sanguineum [1])	8		TISCHLER, 1927*a*, (1926), 1929.
„ *sanguineum* PURSH. [2]). .	8	16	TISCHLER, 1927*b*; MEURMAN, 1928.
		16 & 32 [3])	TISCHLER, 1927*b*.
Subsection Eucoreosoma			
Ribes americana MILL. [4]) . . .	8	16	MEURMAN, 1928*b*.
„ *nigrum*		16 [5])	TISCHLER, 1927*a*; DARLINGTON 1927*a*.
	8		TISCHLER, (1926), 1929.
„ *nigrum* L. [4]).	8	16	MEURMAN, 1928.
Subsection Ribesia			
Ribes multiflorum KIT.	8	16	MEURMAN, 1928.
„ *rubrum*	8		TISCHLER, (1926), 1929.
„ *rubrum* L.	8	16	MEURMAN, 1928.
Grossularioides			
Ribes lacustre	8		TISCHLER, (1926), 1929.
„ *lacustre* POIR.	8	16	MEURMAN, 1928.
Grossularia			
Ribes leptanthum GRAY . . .	8	16	MEURMAN, 1928.
„ *oxyacanthoides*		16 [5])	DARLINGTON, 1927*a*.
„ *oxyacanthoides* var. *Purpusii* KOEHNE	8	16	MEURMAN, 1928.

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[1]) TISCHLER, (1926) 1929 found the nuclei of *R. sanguineum* to be larger than those of *R. aureum*. Then TISCHLER (1927*b*, 1928*a*) described the chromosomes of the former species as being larger than those of the latter, and this difference was recognizable in the hybrid *R. Gordonianum*. MEURMAN (1928) found greater differences between the chromosomes of any one species than between those of the two species.

[2]) One or two lagging chromosomes were observed by MEURMAN (1928) in these „and some other species."

[3]) Syndiploid nuclei were found.

[4]) Irregularities in meiotic divisions occurred to the greatest extent in these two of all the species studied by MEURMAN (1928).

[5]) DARLINGTON (1927*a*) found one pair of chromosomes to have satellites. Root-tips from normal and reverted plants of *Ribes nigrum* show similar groups of 16 chromo-

SAXIFRAGACEAE (continied)	n	2n	
RIBES (continued)			
Ribes grossularia	8		TISCHLER, 1927*a*, (1926) 1929.
		16 [1])	DARLINGTON, 1927*a*.
Section (?) [2])			
Ribes alpinum L.	8		MEURMAN, 1925*a*, 1925*b*.
„ *alpinum*.	8		TISCHLER, (1926), 1929.
„ *petraeum*	8		TISCHLER, 1927*a*, (1926) 1929.
„ sp. (?) „Whitesmith" Gooseberry var. . . .		16 [1])	DARLINGTON, 1927*a*.
„ *Carrierei* SCHNEID. (= *R. glutinosum* × *R. nigrum*)		16	MEURMAN, 1928.
„ *Culverwellii* Mac FARL. (= *R. nigrum* × *R. grossularia*)	$1+\frac{14_I}{2}, 4+\frac{8_I}{2}$	16	„ „
Ribes Gordonianum LEM. (= *R. sanguineum* PURSH. × *R. aureum* PURSH.) . .	8		TISCHLER, 1906, 1928*a*.
	ca. 12 [3])		„ 1921–22.
	$\frac{16_I}{2}$	16	„ 1927*b*.
	$8+0, 0+\frac{16_I}{2}$	16	MEURMAN, 1928.
Ribes holosericeum OTTO. S. DIETR. (= *R. rubrum* × *R. petraeum*)	8	16	„ „
„ *innominatum* JANCZ. [4]) (= *R. divaricatum* × *R. grossularia*).		16	„ „
„ *intermedium* CARR. (= *R. (album) sanguineum* × *R. nigrum*)	8	16	TISCHLER, 1906.
	12 [3])		„ 1921–22.
„ *pallidum* (*R. rubrum* × *R. petraeum*)	10 [5])		HIMMELBAUR, 1912.

[1]) DARLINGTON (1927*a*) found one pair of chromosomes to have satellites. Roottips from normal and reverted plants of *Ribes nigrum* show similar groups of 16 chromosomes.

[2]) The following species were not classified under sections.

[3]) TISCHLER (1927*a*) stated these numbers were incorrect and confirmed the chromosome numbers determined in 1906.

[4]) A few lagging univalents were seen in meiotic divisions of these hybrids.

[5]) Eleven chromatin bodies were seen in a stage of diakinesis, bit one was thought to be the nucleolus.

SAXIFRAGACEAE (continued)	n	2n	
Ribes (continued)			
Ribes robustum JANCZ. (= *R. niveum* × ? *inerme*) . .	8	16	MEURMAN, 1928.
„ *succirubrum* LABEL [1]) (= *R. niveum* × *R. divaricatum*)		16	„ „
„ *urceolatum* TAUSCH. (= *R. multiflorum* × *R. petraeum*)		16	„ „
BRUNIACEAE			
Staavia flutinosa THUNB. . . .	8		SAXTON, 1910.
PLATANACEAE			
Platanus acerifolia	10–11		BRETZLER, 1924.
„ *orientalis* (= *acerifolia*)	21		WINGE, 1917.
„ *occidentalis*	10–11		BRETZLER, 1924.
	8	16	BROUWER, 1924.
„ *orientalis*	10–11		BRETZLER, 1924.
	8	16	BROUWER, 1924.
ROSACEAE			
Cydonia oblonga [2])	17		KOBEL, 1926*b*.
„ *oblonga* MILL.		34	RYBIN, 1926.
„ *oblonga* MILL [2]) (= *C. vulgaris* PERS.) var. Beretzky	17		KOBEL, 1927.
„ *oblonga* MILL. (= *C. vulgaris* PERS.) var. Mammuth	17		„ „
„ *Japonica* [2])	17		„ 1926*b*.
Chaenomeles japonica LINDL [2]).	17		„ 1927.
„ *Maulei* C. K. SCHNEIDER [2]) . .	17		„ „
Pirus communis L..	4		OSTERWALDER, 1910.
		34	RYBIN, 1926.
„ *communis* var. *Alexander Lucas* [3])		ca. 46	FLORIN, 1927.
„ *elaeagrifolia* PALL. [4]) . .		34	RYBIN, 1926.
„ *salicifolia* PALL. [4]) . . .	17		KOBEL, 1927.
„ *sinensis* LDL. [4]) (= *P. ussuriensis* MAXIM. . .	17		„ „

[1]) A few lagging univalents were seen in meiotic divisions of these hybrids.
[2]) KOBEL (1928) states that *Cydonia japonica*, *Maulei*, and *oblonga* are diploid.
[3]) In heterotypic metaphase plates all chromosomes have not united as gemini. Division is irregular and many micronuclei are formed.
[4]) KOBEL (1928) refers to these species as being diploid.

ROSACEAE (continued)	n	2n	
Pirus ussuriensis MAXIM. . . .		34	RYBIN, 1926.
„Kulturbirne" (Normal) . . .	17		KOBEL, 1926*b*.
Pirus sp. (?) (Cultivated Races)			
Amanlis Butterbirne	$\frac{46_{I}}{2}$		„ 1927.
Andre Desportes	$\frac{16+3_{I},\ 17+1_{I}}{2}$		„ 1926*a*.
	17		„ 1927.
Barikerbirne	$\frac{47_{I}}{2}$ [1]		KOBEL, 1926*a*.
		$34+8_{I}-17_{I}$	„ 1926*b*.
	$\frac{51_{I}}{2}$		„ 1927.
Diels Butterbirne	$\frac{45_{I}}{2}$		„ „
		$34+8_{I}-17_{I}$	„ 1926*b*.
Fondante Thirriot	17		„ 1927.
Frühe von Trévoux.	17		„ „
Gellerts Butterbirne (= *Beurré* HARDY)	$16+1_{I}$		„ 1926*a*.
	17		„ 1926*b*, 1927.
Gute Luise von Avrenches . .	17		„ 1927.
Hardenponts Butterbirne . .	17		„ „
Hofratsbirne (= *Conseiller à la cour*)	$\frac{44_{I}-48_{I}}{2}$		„
Knollbirne	19–21 [2]		„ „
Lebrun's Butterbirne	17		„ „
Neue Poiteau	17		„ „
Pastorenbirne (= *Poirre Curé*)	32 [3]		„ 1926*a*.
		$34+8_{I}-17_{I}$	„ 1926*b*, 1927.
	$\frac{55_{I}}{2}$		„ 1927.
Schweizer-Wasserbirne . . .	ca. $\frac{47_{I}}{2}$		„ „
Theilersbirne	at least 23 [4]		„ 1926*a*.
		$34+8_{I}-17_{I}$	„ 1926*b*, 1927.
	$\frac{48_{I}}{2}$		„ 1927.

[1]) The best anaphase figure for determining the number of chromosomes showed groups of 21 and 22 chromosomes + 4 others. It was considered that the total number might be 48.

[2]) An exact determination could not be made.

[3]) Thirty-two chromosomes were usually counted on the heterotypic plates but oftentimes as many as 35 were distinguished.

[4]) The heterotypic plates showed 24 to 27 chromosomes and the homoeotypic plates 23 to 29.

ROSACEAE (continued)	n	2n	
Pirus (continued)			
Vereins Deschantsbirne (= *Doyenné du Commice*) . .	$16+1_I$		Kobel, 1926*a*.
	17		„ 1926*b*, *c*, 1927.
Williams Christbirne (= *Bartlettbirne*)	$16+\frac{2_I}{2}$		„ 1926*a*.
	17		„ 1926*b*, *c*, 1927.
Pirus malus var. *Antonovka* .	17	34	Rybin, 1927*a*.
„ *malus* var. *Antonovka Kamenitchka*		34	„ „
„ *malus* var. *Aport*		34	„ „
„ *malus* var. *Astrachan White*	17	34	„ „
„ *malus* var. *Weisser Astrachan*	17		Kobel, 1927.
„ *malus* var. *Vit Astrakan* .	17,0–11+ $\frac{34_I-0_I}{2}$		Heilborn, 1928*b*.
„ *malus* var. *Babuskino* . .		34	Rybin, 1927*a*.
„ *malus* var. *Belleflower Yellow*.		34	„ „
„ *malus* var. *Belleflower* × *Kitaika of Mitchurin* .		34	„ „
„ *malus* var. *Barlovskoje* .		34	„ „
„ *malus* var. *Belvi Naliv* .	17	34	„ „
„ *malus* var. *Canadian Reinette*.		15	„ „
„ *malus* var. *Kanada Reinette*.	$\frac{38_I-40_I}{2}$		Kobel, 1927.
„ *malus* var. *Calville du roi*		34	Rybin, 1927*a*.
„ *malus* var. *Candille Sinap*		34	„ „
„ *malus* var. *Charlamowsky*	17, $16+\frac{2_I}{2}$, $15+\frac{4_I}{2}$, $10+\frac{13_I}{2}$		Heilborn, 1928*b*.
„ *malus* var. *Dash-Alma* .		34	Rybin, 1927*a*.
„ *malus* var. *Delicious* . .	14		Shoemaker, 1926.
„ *malus* var. *Djir-Hadzhi* .		34	Rybin, 1927*a*.
„ *malus* var. *Golden Reinette of Kursk*.		34	„ „
„ *malus* var. *Gravensteiner*.	ca. $19+\frac{7_I}{2}$		Heilborn, 1928*b*.

ROSACEAE (continued)	n	2n	
Pirus (continued)			
	at least 24 [1])		KOBEL, 1926*a*.
		$34+8_{I}-17_{I}$	„ 1926*b*.
	$\frac{45_{I}-46_{I}}{2}$ [2])		„ 1927.
***Pirus** malus* var. *Gul Richard* (Gelber Richard) . . .	17		HEILBORN, 1928*b*.
„ *malus* var. *Gule-Penbe* .		34	RYBIN, 1927*a*.
„ *malus* var. *Hampus* . .	17, $16+\frac{2_{I}}{2}$		
	$4–5+\frac{26_{I}-24_{I}}{2}$		HEILBORN, 1928*b*.
„ *malus* var. *Lord Grosvenor*		34	RYBIN, 1927*a*.
„ *malus* var. *Oranie* . . .	17		HEILBORN 1928*b*.
„ *malus* var. *Rambur of Tsar. Koje Selo*		34	RYBIN, 1927*a*.
„ *malus* var. *Reinette de Champagne*.	26	34, 51 [3])	„ „
„ *malus* var. *Reinette de Oberdieck*		34	„ „
„ *malus* var. *Reinette d'Orleano*		34	„ „
„ *malus* var. *Rosmarin blanc*	17	34	„ „
„ *malus* var. *Rother Stettiner*		34	„ „
„ *malus* var. *Sary-Sinap* .		34	„ „
„ *malus* var. *Sary-tursh-Alma*		34	„ „
„ *malus* var. *Skvoznoy naliv*	17	34	„ „
„ *malus* var. *Stayman Winesap*		> 28 [4])	SHOEMAKER, 1926.
„ *malus* var. *Suislepper* .		34	RYBIN, 1927*a*.
„ *malus* var. *Tchernoguz* .	17	34	„ „
„ *malus* var. *Titovka* . . .	17	34	„ „
„ *malus* var. *Wealthy* . . .	ca. 17		HEILBORN, 1928*b*.
„ *malus* var. *Winter Golden Pearmain*		34, 51 [3])	RYBIN, 1927*a*.

[1]) Higher numbers were also found and in homoetotypic plates 16—28 (most frequently 21—24) were found.

[2]) Irregular divisions were found in all these species.

[3]) Among the seedlings, triploid (2n = 51) as well as diploid (2n = 34) plants were found. This variety was found to show irregular divisions.

[4]) At diakinesis a number of bivalents and univalents were arranged irregularly.

ROSACEAE (continued)	n	2n	
Pirus (continued)			
Pirus malus var. *Winter Gray Reinette*		34	RYBIN, 1927*a*.
„ *malus* var. *Zalenka Crimean*		34	„ „
MALUS			
Section Eumalus Zabel			
Malus baccata BORKH. [1]) . . .		34	„ 1926.
„ *communis* DC. (= *M. silvestris* MILL. [2]) . . .		34	„ „
„ *silvestris* MILL. [1]) . . .	17		KOBEL, 1927.
„ *prunifolia* BORKH. [1]) . .		34	RYBIN, 1926.
„ *pumila* var. *Niedzwetzkyana* C. K. SCHNEIDER[1])	17		KOBEL, 1927.
„ *pumila* var. *paradisiaca* C. K. SCHNEID. (Paradise) [1])		34	RYBIN, 1926.
	17		KOBEL, 1927.
„ *pumila* var. *praecox* C. K. SCHNEID. (Doucin) [1]) .		34	RYBIN, 1926.
„ *spectabilis* BORKH. [1]) . .		34	„ „
Section Sorbomalus Zabel.			
Malus angustifolia MICHX. [1]) .		34	„ „
„ *coronaria* var. *ioensis* C. K. SCHNEID. [3])		65	„ „
„ *ioensis*	14		MANEY & WELTER, 1928
„ *ioensis* „Mercer county seedling"	13–15		„ „ „
„ *Sargentii* REHD. [3]) . . .		64–69	RYBIN, 1926.
		68	„ „
„ *Toringo* SIEB. [3])		64–71	„ „
„ *Zumi* REHD. [1])		34	„ „
Section (?) [4])			
Malus floribunda SIEB. [1]) [5]) . .	17		KOBEL, 1927.
„ *Halliana* Koehne . . .	$\frac{47_1-(49)_1}{2}$ [6])		„ „
„ *Scheideckeri* ZBL. [1]) . .	17		„ „
„Kulturapfel" (Normal) . . .	17		„ 1926*b*.

[1]) KOBEL (1928) referred to all these species as being diploid.
[2]) Two forms, from European Russia and Transcaucasia, were examined.
[3]) KOBEL (1928) referred to all these species as being tetraploid.
[4]) The following species were not classified under sections.
[5]) Three different forms coming under this species were examined.
[6]) Metaphase plates showed varying unequal distribution of 46 to 49 (most frequently 47) chromosomes.

ROSACEAE (continued)	n	2n		
Malus (continued)				
Malus sp. (Cultivated Races)				
Baldwin	$\frac{48–49}{2}$ [1]		KOBEL,	1927.
Baumann's Reinette	ca. $\frac{36}{2}$ [1]		„	„
Berner Rosenafel.	16		„	1926*a*.
	17		„	1926*b* [2]), *c*, 1927.
Bohnapfel	ca. 24 [3]		„	1926*a*.
		$34+8_{I}-17_{I}$	„	1926*b*.
	$\frac{46\ (-49?)}{2}$		„	1927.
Cellini.	17		„	1927.
Cox's Orangen-Reibette . . .	17		„	„
Damason-Reinette	$\frac{45–47}{2}$ [1]		„	„
Danziger Kantapfel	17		„	„
Esopus Spitzenberg.	17		„	„
Goldreinette von Blenheim. .	ca. $\frac{40}{2}$ [1]		„	„
Harbert's Reinette	$\frac{45}{2}$ [1]		„	„
Jacques Lebel	$\frac{49–(51)}{2}$ [1]		„	„
Kasseler-Reinette	17		„	„
Menznauer Jagerapfel (= *Rot Kanzler*)	ca. $\frac{38}{2}$ [1]		„	„
Muskat-Reintette	17		„	„
Ontario Reinette		33 [4]	„	1926*a*.
	17		„	1927.
Pfirsichroter Sommerapfel. .	17		„	„
Reseda-Reinette	> $\frac{40}{2}$ [1]		„	„
Ribston-Pepping.	$\frac{42}{2}$ [1]		„	„
Roter Eiserapfel	$\frac{47}{2}$		KOBEL,	1927.

[1]) Irregular divisions were found in this species.

[2]) The earlier number (n = 16) for this species was hereby corrected.

[3]) Higher numbers were also found and in homoeotypic plates 16—28 (most frequently 21—24) were found.

[4]) Only a few vegetative cells showing chromosomes were seen and in the clearest this number of chromosomes was counted, — though 24 was the number usually found in diakinesis.

ROSACEAE (continued)	n	2n	
Malus (continued)			
Schöner von Boskoop	17, 19, $\frac{20+9_1, 5_1, 4_1}{2}$		KOBEL, 1926*a*.
		$34+8_1-17_1$	„ 1926*b*.
	ca. $\frac{46}{2}$ [1])		„ 1927.
Sommergewürzaapfel	17		„ „
Stäfner Rosenapfel	$\frac{48-49}{2}$ [1])		„ „
Transparente de Croncels . .	17		„ 1926*b*, 1927.
		$34+8_1$	„ „
Warner's King	$\frac{42}{2}$ [1])		„ 1926*c*, 1927.
Winter-Zitronenapfel . . .	$\frac{48-49}{2}$ [1])		„ 1927.
Transparente de Croncels × *Weisser Astrachan*	17		„ „
Zchulanovka		34	RYBIN, 1926.
Mespilus germanica		32	MEYER, J., 1915
Rubus alleghaniensis PORTER .	7		LONGLEY, 1924*a*.
„ *alleghaniensis*	7		JEFFREY, 1925.
„ *andrewsianus* BLANCHARD	ca. 10		LONGLEY, 1924*a*.
		21	JEFFREY, 1925.
„ *argutus* LINK	ca. 10		LONGLEY, 1924*a*.
		14	JEFFREY, 1925.
„ *chamaemorus*	28		LONGLEY, 1927*a*
„ *frondosus* BIGELOW .		42	JEFFREY, 1925
„ *hispidus* L.	ca 17		LONGLEY, 1924*a*
		35	JEFFREY, 1925
„ *idaeus* L var. „*Superlative*"		14	CRANE & DARLINGTON, 1927.
„ *idaeus obtusifolius* WILLD		14	„ „ „
„ *jeckylanus* BLANCHARD.	ca. 21		LONGLEY, 1924*a*
		42	JEFFREY, 1925.
„ *laciniatus* WILLD (? *R. Selmeri*)		28	CRANE & DARLINGTON, 1927.
„ *neglectus* PECK. . . .	7		LONGLEY, 1924*a*.
		14	CRANE & DARLINGTON, 1927.
„ *phoenicolasus*	7		CHOMISURY, 1924.

[1]) Irregular divisions were found in all these species.

ROSACEAE (continued)	n	2n	
Rubus (continued)			
Rubus plicatifolius BLANCHARD	ca. 17		LONGLEY, 1924*a*.
		35	JEFFREY, 1925.
„ *rusticanus* MERC. var. *inermis* (*R. inermis* WILLD.)	7	14	CRANE & DARLINGTON, 1927.
„ *thrysiger* BAB.	5, 14	28	„ „ „
„ *rusticanus* MERC. var. *inermis* × *R. thrysiger* BAB.		21, 28 [1]	„ „ „
	14		
	$13+2_1$		
	$12+1_3+1_1$		„ „ „
„ sp. (?) var *Baumforths*. *seedling* [2])	7		CHOMISURY, 1927.
„ sp. (?) var. *Goliath*) [2]) .	14		„ „
„ sp. (?) var. *Harzjuwel* [2])	7		„ „
„ sp. (?) *Himalaya berry* (*R. procerus*)		49	CRANE & DARLINGTON, 1927.
„ sp. (?) var. *Lawton* [3]). .	24		CHOMISURY, 1927.
„ sp. (?) *Laxtonberry* (Raspberry × Loganberry)		49	CRANE & DARLINGTON, 1927.
„ sp. (?) *Laxtonberry* (selfed seedlings)		49	„ „ „
. sp. (?) var. *Loganberry* [4])	21		CHOMISURY, 1927.
		42	CRANE & DARLINGTON, 1927.
„ sp. (?) Mahdi (Raspberry × Blackberry) . .		21	, „ „
„ var. *Norwich Wonder* .		14	CRANE, 1927.
„ var. *Superlative*		14	„ „
„ sp. (?) var. „*Turcks frühe Rot*" [3])	14		CHOMISURY, 1927.
„ sp. (?) *Veitchberry* (Raspberry × Blackberry) .		28	CRANE & DARLINGTON, 1927.
„ *Loganberry* × *R. neglectus*		28	„ „ „
„ *Loganberry* × *R. niveus*		28	„ „ „
Fragaria americana BRITTON .	7	14	ICHIJIMA, 1926.
„ *americana alba* . . .	7		MANGELSDORF & EAST, 1927.

[1]) Of 3 seedlings 2 were triploid (2n = 21) and the other was tetraploid (2n = 28).
[2]) Divisions were regular.
[3]) Division was regular.
[4]) The first division was regular but lagging chromosomes often occurred in the second division.

ROSACEAE (continued)	n	2n	
Fragaria (continued)			
Fragaria americana alba PROTER	7		ICHIJIMA (given by EAST, 1928*b*
„ *bracteata* HELLER . .	7		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928*b*).
	7	14	ICHIJIMA, 1926.
„ *californica* CHAM. & SCHLECHT	7		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928*b*).
	7	14	ICHIJIMA, 1926.
„ *chiloensis* [1].	28		LONGLEY, 1926*a*.
„ *chiloensis* DUCHESNE.	28		ICHIJIMA, 1926.
„ *chiloensis* L.	28		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928*b*).
„ *cuneifolia* NUTT (?) .	28		ICHIJIMA, 1926.
„ *elatior*	21		MANGELSDORF, 1927.
	21 [2]	42	KIHARA, 1926.
„ *elatior* EHRH.	21		ICHIJIMA, 1926; ICHIJIMA (give by EAST, 1928*b*)
„ *elatior* EHR (*F. Moschata* DUCHESNE) .	21		MANGELSDORF & EAST, 1927.
„ *elatior* var. *Royal-Hautbois*	21		LONGLEY, 1926*a*.
„ *elatior* var. *Monstreus-Hautbois*	21		LONGLEY, 1926*a*.
„ *glauca* RYDB..	28	ca. 56	ICHIJIMA, 1926.
„ *glauca* WATSON (from Canada).	28		MANGELSDORF & EAST, 1927.
„ *glauca* WATSON . . .	28		ICHIJIMA (given by EAST, 1928*b*).
„ *grandiflora* EHR.. . .	28		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928*b*)
„ *grandiflora* (probably *F. chiloensis*) . . .	28		MANGELSDORF, 1927.
„ *grandiflora* var. *„Champion Early"* .	28		ICHIJIMA, 1926.

[1]) *F. chiloensis* from Alaska and British Columbia showed the same chromosome number. (LONGLEY, 1926*a*).

[2]) In the reduction divisions in the embryo-sac-mother-cell there were 20 bivalents and 2 univalents which KIHARA thought might be sex chromosomes.

ROSACEAE (continued)	n	2n	
Fragaria (continued)			
Fragaria grandiflora var. „*Chesapeake*"	28		ICHIJIMA, 1926.
„ *grandiflora* var. „*Clark's Seedling*" .	28		„ „
„ *grandiflora* var. „*Doctor Burrell*"	28		„ „
„ *grandiflora* var. „*Ettersburg*"	28		„ „
„ *grandiflora* var. „*Gardners*"	28		„ „
„ *grandiflora* var. „*La Pearl*"	28		„ „
„ *grandiflora* var. „*New York*"	28		„ „
„ *grandiflora* var. „*Progressive*"	28		„ „
„ *grandiflora* var. „*Success*"	28		„ „
„ *grandiflora* var. „*William Belt*"	28		„ „
„ *Helleri* HOLZ.	7	14	„ „
„ *Mexicana* SCHLECHT.	7		MANGELSDORF & EAST, 1927, ICHIJIMA (given by EAST 1928*b*).
	7	14	ICHIJIMA, 1926.
„ *vesca* [1]).	7		MANGELSDORF, 1927; LONGLEY 1926*a*.
„ *vesca* L. [2])	7		ICHIJIMA (given by EAST, 1928*b*); MANGELSDORF & EAST, 1927.
	7	14	ICHIJIMA, 1926.
„ *vesca* ROSTRUP. . . .	7		MANGELSDORF & EAST, 1927.
„ *vesca* var. *alpina* Hort. var. *Belle de Meaux*.	7		LONGLEY, 1926*a*.
„ *vesca* var. *Americana alba*	7		„ „
„ *virginiana* DUCHESNE [3])	28		MANGELSDORF & EAST, 1927; ICHIJIMA (given by EAST, 1928*b*).
	28	ca. 56	ICHIJIMA, 1926.

[1]) *Fragaria vesca* from Petrograd and Tiflis both showed the same number according to LONGLEY (1926*a*).

[2]) *Fragaria vesca* L. from Ecuador also had 7 chromosomes, according to MANGELSDORF and EAST (1927).

[3]) *F. virginiana* # 27 also had 28 chromosomes (MANGELSDORF and EAST, 1927).

ROSACEAE (continued)	n	2n	
Fragaria (continued)			
Fragaria virginiana (from Aurora Hills, Virginia).	28		LONGLEY, 1926*a*.
„ *virginia* var. *glauca* .	28		„ „
„ *virginiana* var. *Hort. No. 13*	28		„ „
„ *virginiana* var. *Minnesota* ♯ 3	26		VALLEAU, 1918.
„ (hybrid?) Hort. var. „*Aroma*"	28		LONGLEY, 1926*a*.
„ (hybrid?) Hort. var. „*Dunlap*".	28		„ „
„ (hybrid?) Hort. var. „*Harcourt de Thuey* .	28		„ „
„ (hybrid?) Hort. var. „*Howard No. 17*". .	28		„ „
„ (hybrid?) Hort. var. „*Klondike*"	28		„ „
„ (hybrid?) Hort. var. „*Marshall*"	28		„ „
„ (hybrid?) Hort. var. „*Progressive*" . . .	28		„ „
„ (hybrid?) Hort. var. „*Redfew*"	28		„ „
„ (hybrid?) Hort. var. . „*Rockhill No. 26*" .	28		LONGLEY, 1926*a*.
„ (hybrid?) Hort. var. „*Royal Sovereign*" .	28		„ „
„ *bracteata* × *F. Helleri*	14		ICHIJIMA (given by EAST, 1928*b*).
	7 & 14 [1])		ICHIJIMA, 1926.
„ *bracteata* × *F. virginiana*	$7+\frac{21}{2}$ [2])		„ „
„ *glauca* × *F. virginiana*	28		„ „
„ *Helleri* × *F. americana*	7		„ „
„ *vesca* × *F. americana*	7		„ „

[1]) One of the F_1 plants and the F_2 hybrids obtained by ICHIJIMA (1926) by selfing this plant, had 14 chromosomes as the haploid number.

[2]) In the meiotic division of this hybrid irregularities were observed and irregular tetrad formation resulted.

ROSEACEAE (continued)	n	2n	
Fragaria (continued)			
Fragaria vesca × *F. Helleri* . .	7		ICHIJIMA, 1926.
„ *vesca* var. *alpina* Hort var. *Belle de Meaux* × *F. chiloensis*. . .	7		LONGLEY, 1926*a*.
„ *vesca* var. *americana alba* × *F.* (hybrid?) hort. var. *Aroma* . .	28 [1])		„ „
„ *virginiana* Hort. var. *No. 27* × *F. chiloensis*	28 [2])		„ „
„ *virginiana* Hort. var. *No. 27* × F. (hybrid?) hort. var. „*Howard No. 17*"	28		„ „
„ *virginiana* Hort. var *No 27* × *F.* (hybrid hort. var. „*Marshall*	28		„ „
„ (hybrid?) Hort. var. „*Dunlap*" × *F. virginiana* hort. var. *No. 13*	28		„ „
„ (hybrid?) Hort. var. „*Howard No. 17*" × *F. chiloensis*	28		„ „
„ (hybrid?) Hort. var. „*Minn. No. 82* × *F.* (hybrid?) hort. var. „*Marshall*"	28		„ „
Duchesnea indica	42		ICHIJIMA, 1926.
„ *indica* ANDR. . . .	42		MANGELSDORF & EAST, 1927.
Potentilla alba.	14		TISCHLER, 1928*b*.
„ *anserina*	16		FORENBACHER, 1914 (given by TISCHLER, 1921–22).
„ *anserina L* (*gigas* form)	22(?)[3])		ROSCOE, 1927*b*.
„ *aurea*	ca. 28		TISCHLER, 1928*b*.
„ *erecta* (= *silvestris*) .	16		FORENBACHER, 1914 (given by TISCHLER, 1921–22)

[1]) In one plant of this cross only 7 chromosomes were found.
[2]) Irregular meiosis was observed in this hybrid.
[3]) Though this number was found on one homoeotypic equatorial plate, fewer chromosomes were found on the sister plate. Very irregular divisions made it difficult to state the definite number of chromosomes present.

ROSECEAE (continued)	n	2n	
Potentilla (continued)			
Potentilla reptans	16		FORENBACHER, 1914 (given by TISCHLER, 1921–22).
„ *rubens* ZIMM.	16 [1])		TISCHLER, 1908.
„ *rupestris*.	8		FORENBACHER, 1914 (given by TISCHLER, 1921–22).
„ *Tabernaemontani* ASCHERS.	16		TISCHLER, 1908.
„ *Tabernaemontani* ASCHERS. × *P. rubens* ZIMM.	16	32	„ „
Geum coccineum.		70–(72)	HEITZ, 1926.
Alchemilla cuneata GAUD. . .	32		STRASBURGER, 1904*a*.
„ *fallax* BUS.	32		„ „
„ *gelida* BUS.	32		„ „
„ *grossidens* BUS. . .	32		„ „
„ *micans* BUS. . . .	32		„ „
„ *pentaphylla* L. . . .	32		„ „
„ *speciosa* BUS. . . .	32		„ „
„ *splendens* CHRIST. .	32	ca. 64	„ „
Rosa acicularis		56	BLACKBURN, 1925.
„ *acicularis* LINDL. a *fenniva* LALL. [2])	28		TÄCKHOLM, 1922.
„ *aciularis* f. *fennica* LALL.	21		„ „ ; PENLAND, 1923.
„ *arvensis*	7		BLACKBURN, 1925.
„ *arvensis* HUDS.	7	14	BLACKBURN & HARRISON, 1921 TÄCKHOLM, 1922.
„ *blanda*	14	28	BLACKBURN, 1925.
„ *blanda* AIT.	7		TÄCKHOLM, 1920; PENLAND, 1923.
	14		TÄCKHOLM, 1922.
„ *canina*	8		STRASBURGER, 1904*b*.
„ *canina* L.		35	HURST, 1927.
„ *canina persaticifolia* A. & M.	$7+\text{ca.}20_{I}$		ROSENBERG, 1909*b*.
„ *canina* varieties [3]) . .	$7+21_{I}$		TÄCKHOLM, 1922; BLACKBURN & HARRISON, 1921.
„ *carolina*	7		BLACKBURN, 1925.

[1]) This number was judged from the hybrid with *P. Tabernaemontani* ASCHERS.
[2]) TÄCKHOLM (1922) was uncertain about the specific determination of this form.
[3]) In previous list, GAISER (1926) are given 4 varieties of *R. canina* found by BLACKBURN and HARRISON (1921), and 7 by TÄCKHOLM (1922), having $7 + 21_{I}$ as the haploid number.

ROSACEAE (continued)	n	2n	
Rosa (continued)			
Rosa pimpinellifolia L. (various forms)	14	28	TÄCKHOLM, 1920, 1922; BLACKBURN & HARRISON, 1921; PENLAND, 1923.
„ *pimpinellifolia* var. *spinosissima*	14		BLACKBURN & HARRISON, 1921
„ *pimpinellifolia* L. var. *Ripartii* (DEGL.) R. KELLER	14	28	TÄCKHOLM, 1922.
„ *pimpinellifolia* L. var. *hispida* (SIMS) KOEHNE		28	„ „
„ *pomifera* HEUM.	$7+14_1$		HURST, 1925.
„ *pomifera* HEUM. *recondita* R. KELLER	$7+14_1$	28	TÄCKHOLM, 1922.
„ *pomifera Grenieri* R. KELLER	$7+14_1$	28	„ „
„ *pratincola*	14		BLACKBURN, 1925.
„ *provincialis* AIT.		21	HURST, 1925.
„ *rubiginosa* L.	8		STRASBURGER, 1904*b*.
	$7+21_1$		TÄCKHOLM, 1920, 1922.
„ *rubiginosa* var. *comosa* RIP.	$7+21_1$		BLACKBURN & HARRISON, 1921
„ *rubiginosa* var. *comosa* (RIP.) DUN. (H.B.R.rub.)	$7+21_1$	35	TÄCKHOLM, 1922.
„ *rubiginosa* var. *apricorum* RIP.	$7+21_1$		BLACKBURN & HARRISON, 1921
„ *rugosa* THUNB	7		HURST, 1925; TÄCKHOLM, 1920, BLACKBURN & HARRISON 1921.
„ *rugosa* THUNB. a ferox (LAWR.) C. A. MEYER	7	14	TÄCKHOLM, 1922
„ *rugosa* THUNB. B. *Kamschatica* (VENT.) CRÉP.		14	„ „
„ *rugosa* THUNB. y *chamissoniana* C. A. MEYER		14	„ „
„ *semperflorens* CURT.	$7+7_1$		HURST, 1925.
„ *setigera*	7		BLACKBURN, 1925.
„ *virginiana*	21		HURST, 1927.
	28		„ „
„ *Willmottiae* HEMSL.	7		„ „
		14	TÄCKHOLM, 1920, 1922.

HURST (1925) without stating the chromosome numbers for the individual species gave the following determinations:

Diploid Species: *Rosa Brunonii* LINDL.; *R. fraxinifolia* LINDL.; *R. Hugonis*

ROSACEAE (continued) n 2n

HURST (1928) LIST (continued)

HEMSL.; *R. moschata* MILL.; *R. multiflora* THUNB.; *R. pisocarpa* A. GRAY; and *R. sericea* LINDL.

Triploid Species: *Rosa damascena* L. (from Holland and France).

Tetraploid Species: *Rosa altaica* WILID.; *R. centifolia* L.; *R. mollis* SM.; *R. odorata* SWT. var. *Gloire de Dijon*; and *R. spinosissima* L.

Pentaploid Species: *Rosa damascena* L. (from Persia); and *R. tomentosa* SM.

Hexaploid Species: *Rosa alba* L.; *R. glutinosa* var. *leioclada* CHRIST.; *R. inodora* FRIES.; *R. Jundzilii* BESS.; *R. nutkana* PRESL.; *R. stylosa* var. *evanida* CHRIST.

Octoploid Species: *Rosa acicularis* LINDL.

HURST, in his later list (1928) confirms most of the above determinations and includes many new species. The 1928 list is as follows:

Diploid Species (n = 7): *Rosa abyssinica* R.Br.; *R. anemoneflora* Fortune; *R. arvensis* HUDS.; *R. Banksiae* AIT.; *R. blanda* AIT.; *R. Brunoni* LINDL.; *R. cabulica* BOISS.; *R. Carolina* L.; *R. cathayensis* REHDR. et WILS.; *R. chinensis* JACQ.; *R. cinnamonea* L.; *R. coruscans* WAITZ.; *R. corymbulosa* ROLFE.; *R. davurica* PALL.; *R. Ecae* AITCH.; *R. elegantula* ROLFE; *R. Fendleri* CRÉP.; *R. foliolosa* NUTT.; *R. Genteliana* LÉV. et VAN.; *R. gigantea* COLL.; *R. Giraldii* CRÉP.; *R. gymnocarpa* NUTT.; *R. Helenae* REHDR. et WILS.; *R. Hugonis* HEMSL.; *R. laevigata* MICHX.; *R. Leschenaultiana* (WIGHT et ARNOTT); *R. longicuspis* BERTOL.; *R. huciae* FRANCH et ROCHEBR.; *R. macrophylla* LINDL ; *R Marettii* LÉV.; *R. microcarpa* LINDL.; *R. moschata* HERRM.; *R. multiflora* THUNB.; *R. nipponensis* CRÉP.; *R. nitida* WILLD.; *R. omeiensis* ROLFE.; *R. persetosa* ROLFE.; *R. Phoenicia* BOISS.; *R. pisocarpa* A. GRAY; *R. Pissarti* CARR.; *R. rubrifolia* AIT.; *R. Rubus* LÉV. et VAN.; *R. rugosa* THUNB.; *R. sempervirens* L.; *R. sericea* LINDL.; *R. sertata* ROLFE; R. *setigera* MICHX.; *R. soulieana* CRÉP.; *R. Watsoniana* CRÉP.; *R. Webbiana* WALL.; *R. Wichuriana* CRÉP.; *R. Willmottiae* HEMSL.; *R. Woodsii* LINDL.; *R. Xanthina* LINDL.

Triploid Species (♂ n = 7, ♀n — 14; 2n = 21): Forms of *Rosa sempervirens* LEM.; *R. semperflorens* CURTIS.; *R. chinensis* JACQ.; *R. odorata* SWEET

Tetraploid Species (♂n = 14, ♀n = 14): *Rosa acicularis nipponensis* AUCT.; *R. adjecta* DESEGL.; *R. altaica* WILLD.; *R. baltica* ROTH.; *R. bella* REHD. et WILS.; *R. Bordereana* ROUY; *R. carolina* L.; *R. centifolia* L.; *R. chinensis* JACQ.; *R. chusi mala*; *R. corymbosa* EHR.; *R. Damascena* BLACKW.; *R. Davidi* CRÉP.; *R foetida* HERRM.; *R. gallica* L.; *R. glandulosa* BELLARDI; *R grandiflora* LINDL.; *R. hemispherica* HERRM.; *R. hispida* SIMS.; *R. Hudsoniana* THORY; *R. Humilisgrandiflora* BAKER; *R. Huntii* HURST (sp. nov.); *R. inermis* MILL.; *R johannensis* FERN ; *R. lagenaria* VILL.; *R. laxa* RETZ.; *R. lucida* EHR.; *R. Lunellii* GREENE; *R. lutea* MILL.; *R. lutescens* PURSH.; *R. macrophylla* LINDL. (em.); *R. macrophylla crasseaculeata* VILM.; *R. macrophylla Fargesii* HORT.; *R. macrophylla* var. *Korolkowi*; *R. monspeliaca* GOUAN; *R. multibracteata* HEMSL. et WILS.; *R. muscosa* MILL.; *R. myriacantha* D.C.; *R. ochroleuca* SWARTZ, *R. palustris* MARSH; *R. parvifolia* EHR.; *R. pendulina* L.; *R. pimpinellifolia* L.; *R. pomponia* D.C.; *R. provincialis* MILL.; *R. pumila* JACQ.; *R. punicea* MILL.; *R. pyrenaica* GOUAN; *R. Rapini* BOISS and BAL.; *R. reducta* BAKER; *R. Ripartii* DESEGL.; *R. roseo Moyessii* ALMQ.; *R. rubra* BLACKW.; R.

ROSACEAE (Continued) n 2n

HURST (1928) LIST (continued)

saturata LAMM.; *R. scotica* MILL.; *R. sempervirens* L. (em); *R. setipoda* HEMSL. et WILS.; *R. spinosissima* L.; *R. suffulta* GREENE; *R. virginiana* MILL.

Irregular Tetraploid Species (♂n = 7, ♀n = 21): *Rosa mollis* SMITH; *R. omissa* DESEGL.; *R. pomifera* HERRM.; *R. recondita* PUGET; *R. rubrifolia* VILL.

Pentaploid Species (♂n = 7; ♀n = 28): *Rosa agrestis* SAVI; *R. canina* L.; *R. corriifolia* FRIES.; *R. elliptica* TAUSCH.; *R. Froebeli* CHRIST.; *R. glauca* VILL.; *R. glutinosa* SIBTH. and SM.; *R. micrantha* SMITH; *R. pseudo mollis* LEY; *R. rubiginosa* L.; *R. tomentosa* SMITH.

Hexaploid Species (♂n = 21; ♀n = 21): *Rosa Bourgeauiana* CRÉP.; *R. Engelmanni* S. WATS.: *R. manca* GREENE; *R. Moyesii* HEMSL. and WILS.; *R. nutkana* PRESL.; *R. Sayi* SCHWEIN.; *R. Wilsoni* BORR.

Irregular Hexaploid Species (♂n = 7; ♀n = 35): *Rosa inodora* FRIES.; *R. Jundzilli* BESS.; *R. Pouzini* TRATT.

Octoploid Species (♂n = 28; ♀n = 28): *Rosa acicularis* LINDL.; *R. Täckholmii* HURST (sp. nov.).

	n	2n	
Rosa cinnamomea × *R. rugosa*	7		BLACKBURN, 1925.
„ *pendulina* × *R. pimpinellifolia*	14		„ „
„ *cinnamonea* × *R. pendulina*	$7+7_{\mathrm{I}}$		„ „
„ *pendulina* × *R. nutkana*	$14+7_{\mathrm{I}}$		„ „
„ *tomentosa* × *R. pimpinellifolia* (= *R. Sabini*) .	$14+7_{\mathrm{I}}$		„ „
„ *pimpinellifolia* × *R. tomentosa* (= *R. Wilsoni*)	21	42	„ „
Neurada procumbens . . .	6		MÜRBECK, 1916.

PRUNUS [1])

Subgenus Amygdalus

Section Euamygdalus SPACH.

	n	2n	
Prunus communis FRITSCH . .	8		KOBEL, 1927
„ *communis*	8		„ 1928.
„ *communis* var. *persicoides*	8		„ „
„ *persica*	8		KNOWLTON, 1924; KOBEL, 1928.
„ *persica* STOKES . . .		16	OKABE, 1927, 1928.
„ *persica* S. et Z. varieties:			
Alexis Lepere	8		KOBEL, 1927.
Aribaud	8		„ „

[1]) Classification under subgenera and sections is according to C. K. SCHNEIDER (1906).

ROSACEAE (continued)	n	2n	
PRUNUS (Continued)			
Subgenus Amygdalus (cont'd)			
Section Euamygdalus SPACH. (cont'd)			
Baltet	8		KOBEL, 1927.
Belle de Vitry	8		„ „
Bon ouvrier	8		„ „
Grosse Mignonne Lâtive	8		„ „
Grosse Mignonne tardive	8		„ „
Incomparable Grilloux	8		„ „
Karl Inguf	8		„ „
La France	8		„ „
Madeleine rouge	8		„ „
Monstreuse de Douaie	8		„ „
Noire de Montreuil	8		„ „
President Cardinaux	8		„ „
Siegei	8		„ „
Sneed	8		„ „
Teton de Venus	8		„ „
Vilmorin	8		„ „
Prunus persica f. *Denjuro*	8		ASAMI, 1927.
„ *persica* f. *Shanghai*	8		„ „
„ *persica* vars.		16	DARLINGTON, 1928.
„ *communis* FRITSCH × *P. persica* S. et Z. (= *Amydalus communis* var. *persicoides* SER.).	8		„ „
„ *triloba* LDL.		64	„ „
„ *triloba*	32		KOBEL, 1928.
Section Chamaeamygdalus SPACH.			
Prunus nana FOCKE		16	„ „
„ *nana*	8		„ 1928.
Subgenus Cerasus JUSS.			
Section Eucerasus KOEHNE			
Prunus avium L.		16	OKABE, 1927, 1928.
„ *avium* L. varieties:			
Bingkirsche	8		KOBEL, 1927.
Hedelfinger Riesenkirsche	8		„ „
Maiherzkirsche	8		„ „
Muttenzerkursche	8		„ „
Noire à grappes	8		„ „
Prinzessinkirsche	8		„ „
Regikirsche	8		„ „
Schwarze Herzkirsche	8		„ „
Prunus avium	8		DARLINGTON, 1927*b*; KOBEL, 1928.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus C e r a s u s Juss. (Cont'd)			
Section E u c e r a s u s KOEHNE (cont'd)			
Prunns avium varieties:			
Bigarreau de Schrecken . . .	17		CRANE, 1927; DARLINGTON, 1928.
Bigarreau Kentish	17		CRANE, 1927; DARLINGTON, 1928.
Bigarreau Noir de Schmidt .	17		CRANE, 1927; DARLINGTON, 1928.
Bigarreau noir de Guben . .	17		CRANE ,1927; DARLINGTON, 1928.
Bigarreau Napoleon	18		CRANE, 1927; DARLINGTON, 1928.
Black Eagle	19		CRANE, 1927; DARLINGTON, 1928.
Bohemian Black	18		CRANE, 1927.
Bohemian Black Bigarreau .	18		DARLINGTON, 1928.
Decumana	17 (?)		„ „
Early Purple Guigne	17		„ „
Elton	18		CRANE, 1927; DARLINGTON, 1928.
Emperor Francis	18		CRANE, 1927; DARLINGTON, 1928.
Governor Wood	17		DARLINGTON, 1928.
Guigne d'Annonay	18		CRANE, 1927; DARLINGTON, 1928.
Knight's Early Black . . .	19		CRANE, 1927; DARLINGTON, 1928.
Noble	17		CRANE, 1927; DARLINGTON, 1928.
Waterloo	19		CRANE, 1927; DARLINGTON, 1928.
Yellow Spanish	16 (?)		CRANE, 1927.
Prunus cerasus L. varieties:			
Belle de Montreuil [1])	16 [2])		KOBEL, 1927.
Griotte du Nord [3])	16 [2])		„ „
Kaiserin Eugenie [1])	16 [2])		„ „
Montmorency [1])	16 [2])		„ „
Ostheimer Weichsel [3]) . . .	16 [2])		„ „
Schattenmorelle [3])	16 [2])		„ „

[1]) These species belong to var. *frutescens* NEILR. = subsp. *acida* ASCHERS und GRÄB.

[2]) Irregularities in meiotic divisions were observed. Besides metaphase plates showing 16 and 16 chromosomes, there were others with 15 and 17.

[3]) These species belong to var. *typica* C. K. SCHNEIDER = subsp. *Eucerasus* ASCHER und GRÄB.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus C e r a s u s JUSS. (cont'd)			
Section E u c e r a s u s KOEHNE (cont'd)			
Prunus cerasus	16		DARLINGTON, 1927*b*.
„ *cerasus* varieties:			
Empress Eugenie (?)		32	CRANE, 1927; DARLINGTON, 1928.
Kentish Red		32	CRANE, 1927; DARLINGTON, 1928.
Kentish Red „A"		32	CRANE, 1927; DARLINGTON, 1928.
Late Duke		32	CRANE, 1927; DARLINGTON, 1928.
May Duke		32	CRANE, 1927; DARLINGTON, 1928.
Morello		32	CRANE, 1927; DARLINGTON, 1928.
Reine Hortense		32	CRANE, 1927; DARLINGTON, 1928.
Wye Morello		32	CRANE, 1927; DARLINGTON, 1928.
Prunus cerasus var. *acida* . .	< 24		KOBEL, 1928.
„ *cerasus* var. *typica* . .	< 24		„ „
„ *pumila* L.	8		„ 1927.
„ *pumula*	8		„ 1928.
„ sp.(?) (*Reine Hortense*[1])	16		„ 1927.
Section M a h a l e b KOEHNE			
„ *Mahaleb* L.	8		„ 1927.
„ *Mahaleb*	8		„ 1928.
Section P s e u d o c e r a s u s			
Prunus serrulata LDL.	8		„ 1927.
Prunus serrulata	8	„	1928.
„ *serrulata* LINDL. varieties (*formae*)			
affinis MIYOSHI „*Jyô-nioi*" .		16	OKABE, 1927, 1928.
albida MIYOSHI „*Shirotae*" .		24 [2])	„ „ „
amabilis MIYOSHI „*Higurashi*"		16	„ 1928.
angustipeta MIYOSHI „*Koke-Shimidzu*"		16	„ 1927, 1928.

[1]) KOBEL states this used to be considered a hybrid between *P. avium* and *P. cerasus*.

[2]) These varieties having 2n = 24 showed 8 trivalent chromosomes in heterotypic division of pollen-mother-cells.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus Cerasus Juss. (Con't).			
Section Pseudocerasus (Cont'd.)			
arguta MIYOSHI „*Washino-o*"		24 [1])	OKABE, 1927, 1928.
atroruba MIYOSHI „*Kirin*" .		16	„ „ „
bulbata MIYOSHI „*Ojyôchin*".		24 [1])	„ „ „
caespitosa MIYOSHI „*Takasz-go*"		24	„ 1928
campanulata MIYOSHI „*Gijyo*"		16	„ 1927, 1928.
candida MIYOSHI „*Ariake*" .		24 [1])	„ „ „
cataracta MIYOSHI „*Taki-nioi*"		16	„ „ „
classica MIYOSHI „*Fugenzô*"		16	„ „ „
communis MIYOSHI „*Koshio-yama*"		16	„ „ „
contorta MIYOSHI „„*Fukuro-kuji*"		24 [1])	„ „ „
decora MIYOSHI „*Horinji*" .		16	„ „ „
dilata MIYOSHI „*Amayadori*"		24	„ 1928.
diversiflora MIYOSHI „*Miku-rumagaeshi*"		16	„ „
erecta MIYOSHI „*Amanogawa*"		16	„ 1927, 1928.
fasciulata MIYOSHI „*Ito-Ku-kuri*"		16	„ „ „
formosissima MIYOSHI „*Beni-tora-no-o*"		16	„ 1928.
glauca MIYOSHI „*Minakami*"		16	„ „
grandiflora MIYOSHI „*Man-getsu*"		24 [1])	„ 1927, 1928.
homogena MIYOSHI „*Koko-noe*"		16	„ „ „
hosokawa-odora MIYOSHI „*Hosokawa-nivi*"		16	„ „ „
Komatsunagi MIYOSHI „*Ko-matsunagi*"		24 [1])	OKABE, 1927, 1928.
luteo-virens MIYOSHI „*Ukon*"		16	„ „ „
multipetala MIYOSHI „*Naji-ma-sakura*"		16	„ 1928.
multiplex MIYOSHI „*Shiroha-na Mazakura*"		24 [1])	„ 1927, 1928.
nigrescens MIYOSHI „*Usuzu-mi*"		25	„ 1928.

[1]) These varieties having 2n = 24 showed 8 trivalent chromosomes in heterotypic division of pollen-mother-cells.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus Cerasus JUSS. (Cont'd.)			
Section Pseudocerasus (Cont'd.)			
nivea MIYOSHI „*Shirayuki*" .		16	OKABE, 1927, 1928.
nobilis MIYOSHI „*Yedo*" . .		16	„ „ „
picta MIYOSHI „*Senriko*" . .		24 [1])	„ „ „
purpurascens MIYOSHI „*Kanzan*".		16	„ „ „
purpurascens suf. *pallida* MIYOSHI „Masu-yama". . .		16	„ „ „
purpurea MIYOSHI „*Marusakizakura*"		16	„ 1928.
regularis MIYOSHI „*Itsuka-Yama*"		16	„ „
rubescens MIYOSHI „*Arashi-Yama*"		16	„ 1928.
rubida MIYOSHI „*Ben-dono*".		16	„ „ 1928
similis MIYOSHI „*Tagui-arashi*"		16	„ „ „
splendens MIYOSHI „*Chôshû-hizakura*"		16	„ „ „
superba MIYOSHI „*Shôgetsu*"			„ „ „
surugadai MIYOSHI „*Suragadai-nioi*".		16	„ 1928
tricolor MIYOSHI „*Gyoikô*"		16	„ „
unifolia MIYOSHI „*Ichiyô*" .		16	„ „
Subgenus Euprunus C. K. SCHNEIDER			
Section Armeniaca, W. D. J.:			
Prunus Armeniaca L. „*Ambrosia*".		16	KOBEL, 1927.
„ *Armeniaca* L. „*Früher Moorpark*"	8		„ „
„ *Armeniaca* L. „*Luizet-Aprikose*"	8		KOBEL, 1927.
„ *Armeniaca* L. „*Précoce de Boulbon*" [2]) . . .	8		„ „
„ *Armeniaca*.	8		„ „
„ *Armeniaca* L. var. *Ansu* Max		16	OKABE, 1927, 1928.

[1]) These varieties having 2n = 24 showed 8 trivalent chromosomes in heterotypic division of pollen-mother-cells.

[2]) An unknown kind from Hauser Gardeners in Wadenswil showed n = 8 also.

ROSACEAE (continued)	n	2n	
Prunus (continued)			
Subgenus Euprunus C. K. Schneider. (Cont'd).			
Section Prunophora Fiori et Paol			
Prunus cerasifera	8		Darlington, 1927*b*; Kobel, 1928.
„ *cerasifera* var. *Marianna*.		16	Crane, 1927, Darlington, 1928.
„ *cerasifera* Ehr s. l. . .	„		Kobel, 1927.
„ *cerasifera* Ehr. s. l. „*Myroblane*"	8		„ „
„ *cerasifera* Ehr. s. l. „*Kirschpflaume*" . .	8		„ „
„ *cerasifera* Ehr. s. l. var. *Pissardi* Koehne (= *P. Pissardi* Carr). .	8		„ „
„ *Pissardi*.	8		„ „
„ *cerasifera* Ehr. s.l. var. *Pissardi Moseri* . . .	8 [1])		„ „
„ *Moseri*	8		„ 1928.
„ *domestica*		48	Crane, 1927.
	24		Darlington, 1927*b*.
	<24		Kobel, 1928.
„ *domestica* s.l.	24		„ „
„ *domestica* L.	16		Okabe, 1927.
„ *domestica* L. ssp.:			
insititia (L.) Poiret var. *Juliana* L. (St. Julien pflaume)			Kobel, 1927.
insititia (L.) Poiret var. *pomariorum* Boutgny (Katalonischer Spilling) . . .	24		„ „
insititia (L.) Poiret var. *cerea* L. (Mirabelle von Metz)	24		„ „
italica Borkhausen var. *Claudiana* Poiret (g.g. Reineclaude)	24		„ „
italica Borkhausen var. *ovoidea* Martens (Pfirsichpflaume)	24		„ „
italica Borkhausen var. *ovoidea* Martens (Schöne von Lowen)	24		„ „

[1]) Irregular meiotic divisions were observed.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus Euprunus C. K. SCHNEIDER. (Cont'd).			
Section Prunophora FIORI et PAOL (Cont'd).			
italica BORKHAUSEN var. *ovoidea* MARTENS (rote Herrenpflaume)	24		KOBEL, 1927.
oeconomica BORKHAUSEN var. *mamillaris* SCHÜBELER et MARTENS (Bühler Frühzwetschge)	24 [1]		„ „
oeconomica BORKHAUSEN var. *mamillaris* SCHÜBELER et MARTENS (Grossherzog) . .	24		„ „
oeconomica BORKHAUSEN var. *oxycarpa* (BECHSTEIN) (Jefferson)	24		„ „
oeconomica BORKHAUSEN var. ocyxarpa (BECHSTEIN) (Washington)	24		„ „
oeconomica BORKHAUSEN var. *pruneauliana* SER. (Deutsche Hauszwetzchge). . .	24		„ „
oeconomica BORKHAUSEN var. *pruneauliana* SER. (Italienische Hauszwetzschge).	24		„ „
oeconomica BORKHAUSEN var. *subrotunda* (BECKSTEIN) (Kirkespflaume). .	24		„ „
Prunus nigra AIT.	8		„ „
„ *nigra*	8		„ 1928.
„ *spinosa*	16	32	DARLINGTON, 1927*b*; KOBEL, 1928.
		32	CRANE, 1927.
„ *spinosa* L. [2]	16 [3]		KOBEL, 1927.
„ *spinosa* seedling . . .		32	DARLINGTON, 1928.
„ *triflora* ROXB.	8		DARLINGTON, 1927*b*; KOBEL, 1927.
		16	OKABE, 1927, 1928.
Subgenus Padus BORKH.			
Prunus Padus L. (= *P. racemosa* LAM.)	16		KOBEL, 1927.

[1]) In this form only 23 chromosomes were frequently counted.
[2]) Four different examples were examined.
[3]) Irregularities in division occurred.

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus Padus BORKH. (Cont'd).			
Prunus Padus	16		KOBEL, 1928.
„ *Padus* L.		32	OKABE, 1927, 1928.
„ *serotina* AGARDH. . . .		32	KOBEL, 1927.
„ *serotina*	16		„ „
Subgenus Laurocerasus ROEMER			
Prunus Laurocerasus ROEMER var. *macrophylla* S. et Z.		72	KOBEL, 1927.
„ *Laurocerasus* ROEMER var. *schipkaensis* SPATH		ca. 72	„ „
„ *Laurocerasus*.		72	„ 1928.
Section Prunophora NECK [1]).			
Prunus Mume S. et Z.		16	OKABE, 1927, 1928.
„ *Mume* var. *microcarpa* MAKINO		16	„ „ „
„ *Mume* (a race). . . .		24	„ 1928.
Section Amygdalus TOURN.			
Prunus amygdalus STOKES . .		16	OKABE, 1927, 1928
„ *amygdalus* vars. . . .		16	DARLINGTON, 1928
Section Cerasus TOURN.			
Prunus cerasoides DON. var. *campanulata* KOIDZ. .		16	OKABE, 1927, 1928.
„ *crasipes* KOIDZ.. . . .		16	„ „ „
„ *incisa* THG.		16	„ „ „
„ *Itosakura* SIEB. . . .		16	„ „ „
„ *Itosakura* var. *pendula* KOIDZ..		16	„ „
„ *Itosakura* (a race). . .		24	„ 1928.
„ *japonica* THG.		16	„ 1927, 1928
„ *Kurilensis* MIYABE . .		16	„ „
„ *mutabilis* MYOSHI var. (*formae*):			
brevipedunculata MIYOSHI (*Kojima-sakura*).		16	„ 1928
dilucularis MIYOSHI (*Hinodeno-sakura*)		16	„ „
formosa MIYOSHI (*Maruko-sakura*)		16	„ „
hiemalis MIYOSHI (*Jyûroku-nichi-sakura*)		16	„ „

[1]) The following arrangement is from OKABE (1928).

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Subgenus Laurocerasus ROEMER (Cont'd).			
Section Cerasus TOURN. (Cont'd).			
Katsumi MIYOSHI (*Katsumi-sakura*)		16	OKABE, 1928.
longipedunculata MIYOSHI (*Kasa-sakura*).		16	„ „
musashiensis MIYOSHI (*musashino-sakura*)		16	„ „
nebrosa MIYOSHI (*Kasumi-sakura*)		16	„ „
regalis MIYOSHI (*Kwao-sakura*)		16	„ „
rotunda MIYOSHI (*Midzuho-sakura*)		16	„ „
rubriflora -MIYOSHI (*Komatsu-sakura*)		16	„ ,
speciosa MIYOSHI (*Jurokunichi-zakura*)		16	„ 1927.
speciosa MIYOSHI (*Oshima-sakura*)		16	„ „
Sumizomo-odora MIYOSHI (*Sumizome-nioi*)		16	„ 1928.
tanashiensis MIYOSHI (*Tanashi-sakura*)		16	„ „
venusta MIYOSHI (*Fuhima-sakura*)		16	„ „
Prunus pseudo-cerasus LINDL. .		32	„ „
„ *sachalinensis* MIYOSHI		16	„ 1927, 1928.
„ *subhirtella* (MIQ.) KOIDZ.		16	„ „ „
„ *tomentosa* THG.		16	„ „ „
„ *yedoensis* MATSUM. . .		16	„ „ „
„ *jedoensis*		16	ISHIKAWA, 1916.
Section Padus MÖNCH			
Prunus Grayana MAXIM. . . .		32	OKABE, 1927, 1928.
„ *Ssiori* F. SCHMIDT . .		32	„ „ „
Section(?) [1]			
Prunus acida	16		DARLINGTON, 1927*b*.
„ *acida multicarpa* . . .		32	„ 1928.
„ *acida salicifolia*. . . .		32	„ „
„ *americana „Iron Clad"*	10		DORSEY, M. 1919.

[1]) The following species were not classified under sections.

ROSACEAE (continued)	n	2n	
Prunus (continued)			
***Prunus** americana* „*Stoddard*".	10		Dorsey, M. 1919.
„ *americana mollis* „*Wolf*		20	„ „ „
„ *avium nana*		24	Darlington, 1928.
„ *communis*	8		Kobel, 1928.
„ *communis* var. *persicoides*	8		„ „
„ *fruticosa*	16		Darlington, 1928.
„ *hortulana mineri* „*Surprise*"		20	Dorsey, M. 1919.
„ *insititia*		48	Crane, 1927.
	24		Darlington, 1928.
„ *insititia* var. „*King of the Damsons*" (selfed seedling)		48	Darlington, 1928.
„ *pennsylvanica*		20	Dorsey, M. 1919.
„ *Americana* × *triflora* „*Stella*"	10		„ „ „
„ *Besseyi* × (*P. Munsoniana* × *triflora*) „Opata"	ca. 10		„ „ „
„ *cerasifera* × *P. domestica*	16		Darlington, 1927*b*.
„ *domestica* × *P. cerasifera*.		32	Crane, 1927.
„ *domestica* var. *Jefferson* × *P. cerasifera* var. „*Myrobolan Red*" Seedling		32	Darlington, 1928.
„ *insititia* × *P. spinosa*		40	Crane, 1927.
„ *insititia* var. „*King of the Damsons*" × *P. spinosa* seedling		40	Darlington, 1928.
„ *persica* × *P. amygdalus* seedling		16	„ „
„ *triflora* × *P. Americana mollis*, „*Minnesota # 12*".	10		Dorsey, M. 1919.
„ *triflora* × *P. persica* seedling		16	Darlington, 1928.
„ *triflora* var. „*Shiro*" × *P. cerasifera* var. „*Pissardii*" seedling"		16	„ „
„ *triflora* × *P. Simonii* (?) var. „*Maynard*"		16	„ „

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Prunus Seedlings:			
Big. Napoleon × *Big. de Schrecken*		16, 18	CRANE, 1927.
Big. Napoleon × *Big. de Schrecken* (tall)		18	DARLINGTON, 1928.
Big. Napoleon × *Big. de Schrecken* (dwarf)		16	„ „
Big. de Schrecken × *Black Tartarian B.*		16	CRANE, 1927; DARLINGTON, 1928.
Big. Kentish × *Morello*. . .		24, 32	CRANE, 1927.
Kentish Bigarreau × *Morello* (seedling- 1)		32	DARLINGTON, 1928.
Kentish Bigarreau × *Morello* (seedling- 2)		24	„ „
Bohemian Black × *Kentish Red*		26	CRANE, 1927.
Bohemian Black Bigarreau × *Kentish Red „A"* . .		26	DARLINGTON, 1928.
Bohemian Black Bigarreau × *May Duke*		24, 25 [1]	„ „
Bohemian Black Bigarreau × *Reine Hortense*		24	„ „
Elton × *Wye Morello* . . .		24, 26	CRANE, 1927.
		26(?)	DARLINGTON, 1928.
Emperor Francis × *Bigarreau Frogmore* [2].		32	CRANE, 1927.
Emperor Francis × *Governor Wood* (tall)		18	DARLINGTON, 1928.
Emperor Francis × *Governor Wood* (dwarf)		16	„ „
Empress Eugenie (selfed) . .		32	CRANE, 1927; DARLINGTON, 1928.
Governor Wood × *Black Tartarian B*		16	CRANE, 1927.
Governor Wood × *Black Tartarian*		16	DARLINGTON, 1928.
Guigne de Winkler [3]) × *May Duke*		32	„ „

1) Only one seedling of this cross had 25 chromosomes, while four had 24 chromosomes.
2) For *Bigarreau Frogmore* 2n = (? 16—19).
3) For *Guignede Winkler* 2n = (? 16—19).

ROSACEAE (continued)	n	2n	
PRUNUS (continued)			
Kentish Red „A" (selfed) . .		32	CRANE, 1927, DARLINGTON, 1928.
May Duke × *Yellow Spanish*		19	CRANE, 1927; DARLINGTON, 1928.
Morello × *May Duke* . . .		32	CRANE, 1927, DARLINGTON, 1928.
Waterloo × *Black Eagle* . .		16, 19	CRANE, 1927. DARLINGTON, 1928.
Wye Morello (selfed) . . .		32	CRANE, 1927; DARLINGTON, 1928.
Wye Morello × *Napoleon* .		23, 24	CRANE, 1927.
		23	DARLINGTON, 1928.
Cerisier „Montmorency Pleureur"	16		„ „
Mahaleb Seedling		16	„ „
Seedling C 12 [1]).		19	„ „
Osmaronia cerasiformis GREENE (= *Nuttallia cerasiformis* TORR. et GR.) . .	6		KOBEL, 1927.
LEGUMINOSAE			
Cassia fistula	12		TISCHLER, 1921–22.
„ *tomentosa* L.	12		HUS, 1904.
	12	24	SAXTON, 1907.
Lupinus albus.		ca. 40	DE SMET, 1914.
„ *luteus*		44–46	HEITZ, 1926.
Cytisus Adami (= *Laburnum Adami*).		48	ISHIKAWA, 1916.
	24	48	STRASBURGER, 1905*b*, 1907.
„ *Laburnum* (= *Laburnum vulgare*)	24	48	STRASBURGER, 1905*b*, 1907.
„ *nigricans* L.	24		DE VILMORIN & SIMONET, 1927*b*.
„ *purpureus*	24	48	STRASBURGER, 1905*b*, 1907.
MEDICAGO [2])			
Section Falcago			
Medicago sativa		32	GHIMPU, 1928.
Section Lupularia			
Medicago lupulina		16	GHIMPU, 1928.

[1]) This seedling was distinguishable from all the edible varieties studied, because of the exceptional irregularity of its divisions.

[2]) Classification under sections is according to ENGLER & PRANTL.

LEGUMINOSAE (continued)	n	2n	
Section S p i r o c a r p o s			
Medicago disciformis		16	GHIMPU, 1928.
„ *Echinus*		16	„ „
„ *Fenoreana*		16	„ „
„ *Helix*		16	„ „
„ *maculata*		16	„ „
„ *minima*		16	„ „
„ *orbicularis*		16	„ „
„ *rigidula*		16	„ „
„ *scutellata*		16	„ „
„ *sphaerocarpa*		16	„ „
„ *tornata*		16	„ „
„ *truncatula*		16	„ „
Melilotus alba DESR.	8		CASTETTER, 1923.
„ *alba*	8		„ 1925.
TRIFOLIUM [1])			
Section T r i d e n t a t a e			
Trifolium obtusiflorum HOOK (2 strains)		16	WEXELSEN, 1928
„ *obtusiflorum* var *majus* (*T. majus* GREENE)		16	„ „
Section V a r i e g a t a e			
Trifolium variegatum NUTT.		16	WEXELSEN, 1928.
„ *wormskjoldii* LEHM		48(?)	„ „
Section C y a t h i f e r a e			
„ *microcephalum* PURSH.		16	„ „
Section V e s i c u l e a e			
Trifolium furcatum LINDL.		16	„ „
„ *furcatum* var. *virescens* (*T. virescens* GREENE)		16	„ „
Section M a c r e a e			
Trifolium albopurpureum T. and G.		16	„ „
„ *dichotomum* H. and A.		32	„ „
Section L o n g i f o l e a e			
Trifolium reflexum L.		16	WEXELSEN, 1928.
Section C i l i a t e a e			
Trifolium ciliolatum BENTH. (*T. ciliatum* NUTT.)		16	„ „

[1]) Classification under sections is according to McDwomott (1910).

LEGUMINOSAE (continued)	n	2n	
Section Euamoria			
Trifolium repens var. *sylvestre* (*hollandicum*) . . .		32 [1])	ERITH, 1924
„ *repens* var. *sylvestre* (*giganteum*)		32 [1])	„ „
Wistaria brachybotrys	8		JIMBO, 1927.
„ *floribunda*	8		„ „
„ *floribunda* Dc. var. *alba* REHDER & WILSON [2])	8		ROSCOE, 1927*a*
„ *floribunda* Dc. var. *Macrobotrys* REHDER & WILSON [3]) . .	8		„ „
„ *floribunda* Dc. var. *rosea* REHDER & WILSON [4])	8		„ „
Wistaria frutescens (L.) POIR. var. *alba* REHDER & WILSON	8		ROSCOE, 1927*a*.
„ *macrostachya* NUTT. [4])	8		„ „
„ *sinensis* SWEET [5]) . .	8		„ „
„ *venusta* REHDER & WILSON [6])	8		„ „
Colutea arborescens		10–18	NĚMEC, 1910.
Cicer arietinum L.		14 [7])	DOMBROWSKY-SLUDSKY, 1927.
VICIA [8])			
Section I			
Vicia Faba		12	NEMEC [9]), 1904, 1910; FRANCK, 1911; STRASBURGER, 1911; LUNDEGARDH, 1914*a*; SHARP 1914; VAN REGEMORTER, 1926—27.
		ca.12-15	LUNDEGARDH, 1910, 1912.
	6	12	SAKAMURA, 1915, 1920.

[1]) In previous list, GAISER (1926), 16 was incorrectly given in the diploid column, though foot-note stated there were 32 diploid chromosomes.

[2]) Meiotic divisions were irregular.

[3]) Meiotic divisions were regular.

[4]) Not sufficient material was available „to furnish a clear idea of the progress of the divisions.

[5]) The chromosomes showed tardiness in forming the metaphase plate but usually arrived at the poles in time to form normal pollen tetrads.

[6]) Polyspory was frequent in this species.

[7]) One pair of chromosomes had „acolytes" (satellites).

[8]) Classification under Sections is according to ASCHERSON and GRAEBNER (1906—1910).

[9]) In root-tips treated with chloral hydrate syndiploid nuclei with 24 chromosomes were found.

LEGUMINOSAE (continued)	n	2n	
VICIA (continued)			
Vicia Faba L.		12	HOROVITZ, 1926, SCHWESHNIKOWA, 1927.
Section II			
Subsection I			
Group Ervum			
Vicia disperma Dc.		14	NIKOLAJEWA (given by SCHWESNIKOWA, 1927).
„ *Ervilia* WILLD.		14	NIKOLAJEWA (given by SCHWESHNIKOWA, 1927); SCHWESHNIKOWA, 1927.
„ *hirsuta* S. E. GRAY		14	NIKOLAJEWA (given by SCHWESHNIKOWA, 1927); SCHWESHNIKOWA, 1927.
„ *monantha* DESF.		14	NIKOLAJEWA (given by SCHWESHNIKOWA, 1927); SCHWESHNIKOWA, 1927.
Group Cracca			
Subgroup Vicilla			
Vicia orobus Dc.		12	SCHWESHNIKOWA, 1927.
„ *pseudorobus*		12	SAKAMURA, 1920.
„ *silvatica* L.		14	SCHWESHNIKOWA, 1927.
„ *unijuga*		24	SAKAMURA 1916 (given by ISHIKAWA, 1916).
„ *unijuga* A. BR.	12	24	SAKAMURA, 1920.
		12	SCHWESHNIKOWA, 1927.
Subgroup Eucracca			
Vicia amoena FISCH		24	„ „
„ *atropurpurae*		14	SAKAMURA, 1920.
„ *atropurpurea* DESF.		14	SCHWESNIKOWA, 1927.
„ *cracca* L.	6	12	SAKAMURA, 1914, 1920.
		12[1]&28	SCHWESHNIKOWA, 1927.
		12[2], 14, 28[3]	„ 1928.
„ *dasycarpa* TEN.		14	NIKOLAJEWA (given by SCHWESHNIKOWA, 1927; SCHWESHNIKOWA, 1927.
„ *picta* FISCH. u. MEY.		14	SCHWESHNIKOWA, 1927.
„ *pseudo-cracca*		14	SAKAMURA, 1920.

[1]) Of 10 samples of *V. cracca* from different localities in Germany and Russia, only one showed 12 chromosomes.

[2]) Of 20 plants with 12 chromosomes, only 3 over-wintered and these were chlorotic and slow to bloom.

[3]) The tetraploid form had only one pair of satellites, whereas the diploid had two pairs.

LEGUMINOSAE (continued)	n	2n	
VICIA (continued)			
Group C r a c c a (continued)			
Vicia pseudo-cracca BERTOL. .		14	SCHWESHNIKOWA, 1927.
„ *tenuifolia* ROTH.		24	„ „
„ *villosa* ROTH.		14	„ „
Subsection II. E u v i c i a			
Vicia angustifolia L.		12	NIKOLAJEWA (given by SCHWESHNIKOWA, 1927); SCHWE SHNIKOWA, 1927.
„ *angustifolia* [1])		12	SCHWESHNIKOWA, 1928.
„ *amphiocarpa* (= *V. angustifolia variifolia, V. lathyroides*)		14	„ „
„ *bithynica* L.		14	NIKOLAJEWA (givnen by SCHWE SHNIKOWA, 1927); SCHWESHNIKOWA, 1927.
„ *granditlora* SCOP. . . .		14	SCHWESHNIKOWA, 1927.
„ *hybrida* L.		12	SCHWESHNIKOWA, 1927.
„ *lutea* L.		14	„ „
„ *macrocarpa* MOR. . . .		12	„ „
„ *narbonensis* L.		14	„ „
„ *pannonica* CRANTZ. . . .		12	„ „
„ *peregrina* L.		14	„ „
„ *sativa*		12	(SAKAMURA) given by ISHIKAWA, 1916.
	6	12	SAKAMURA, 1920, BLEIER, 1928*a*.
„ *sativa* L.		12	SCHWESHNIKOWA, 1927.
„ *sepium* L.		14	(NIKOLAJEWA) given by SCHWESHNIKOWA, 1927.
„ *serratifolia* JACQ. . . .		14	SCHWESHNIKOWA, 1927.
Section (?)			
Vicia gracilis LOIS.		14	„ „
„ *tetrasperma* MOENCH . .		14	„ „
Lens esculenta		14	SAKAMURA, 1920; HEITZ, 1926.
„ *esculenta* MOENCH . . .		14	BLEIER, 1928*a*.
„ *esculenta* × *Vicia sativa*.	6	12	„ „
Lathyrus latifolius L.	7	14	WINGE, 1919.
„ *odoratus*	7		LATTER, 1926; PUNNETT, 1927.
„ *odoratus* L.	7	14	WINGE, 1919; MAEDA, 1928.
„ *vernus*		14	SAKAMURA, 1920.

[1]) A typical form is cytologically distinguished from a larger form by the elongated arm of the „A" chromosome of the latter.

LEGUMINOSAE (continued)	n	2n	
Pisum sativum		14	NĚMEC, 1903*a* [1]), *b*, 1904; KEMP, 1910 [1]); (SAKAMURA, 1916) given by ISHIKAWA, 1916; SAKAMURA, 1920; HEITZ [2]) 1926; DOMBROWSKY-SLUDSKY [3]); 1927.
	7		STRASBURGER [1]) 1907; BATESON & PELLEW, 1920; DE WINTON, 1928.
	7	14	STRASBURGER [1]), 1911.
„ *sativum „Debarbieux"* .	7		CANNON, 1903*b*.
„ *sativum „Fillbasket"* . .	7		„ „
„ *sativum „Pois turc"* . .		14	WELLENSIEK, 1925*a*, *b*.
„ *sativum „Chatenay Pois"*		14	„ „
„ *sativum „Serpette"*. . .	7		CANNON, 1903*b*.
„ *sativum* race *„Swaleuf"* (No. 27 original Soloerbse)		14 [4])	DOMBROWSKAJA, 1924.
„ *sativum* mutant *fasciata*	7		WINGE, 1925.
„ *sativum* (rogue type) .	7		BATESON & PELLEW, 1920; WINGE, 1920.
„ *sativum „Express"* × *„Serpette"*	7	14	CANNON, 1903*b*.
„ *sativum „Fillbasket"* × *„Debarbieux"*	7	14	„ „
„ (diverse forms)		14	GRÉGOIRE, 1912.
Soja hispida (probably = *Glycine soja*)		20	KARPECHENKO, 1925.
Glycine Soja (*Akasaya*) . . .		38	YAMAHA & SINOTO, 1925.
Phaseolus multiflorus	12		KLEINMAN, 1923.
Phaseolus multiflorus WILLD. .		22	KARPECHENKO, 1925.
„ *radiatus* L. var *Aurea* PRAIN *„Shonagon"*		22	KATAYAMA, 1928.
„ *radiatus* L. var. *flexuosus* MATSUM . .		22	„ „
„ *vulgaris*		22	WEINSTEIN, 1926.
„ *vulgaris* L.		22	KARPECHENKO, 1925.

[1]) These investigators found syndiploid nuclei (2n = 28) in cells of the root-tips after treating with chloral hydrate.

[2]) HEITZ found the same number in both short and tall forms.

[3]) The investigator found that one pair of chromosomes had „acolytes" (satellites).

[4]) Two pairs of chromosomes possessed „acolyres" (satellites). Sometimes 16 chromosomes or a syndiploid number were found.

LEGUMINOSAE (continued)	n	2n	
Phaseolus (continued)			
Phaseolus vulgaris × *P. multiflorus*		22 [1])	KARPECHENKO, 1925.
Dolichos multiflorus		24	NĚMEC, 1910.
GERANIALES			
GERANIACEAE			
Geranium pratense L.	12		TJEBBES, 1928.
„ *pyrenaicum*		21, 22–24	HEITZ, 1926.
„ *sylvaticum* L. . . .	12		TJEBBES, 1928.
„ spec. cult. hort. . .		18	HEITZ, 1926.
Erodium cicutarium		36–(38)	„ „
PELARGONIUM [2])			
Section Dibrachya			
Pelargonium peltatum AIT. var. *scutatum* HAV. .	18	36	TAKAGI, 1928*b*.
Section Ciconium			
Pelargonium hortorum class.:			
Kinsekai	9	18	„ „
Manazuru		18	„ „
Kakuremino		18	„ „
Kirin		18	„ „
Lady Thomson		18	„ „
Shirataka		18	„ „
Pelargonium inquinans AIT. .	9	18	„ „
„ *zonale* WILLD. (*Koshinoyuki*) . .	18 [3])	36 [4])	„ „
Section Cortusina			
Pelargonium odoratissimum AIT.	8	16	„ „
Section Pelargonium			
Pelargonium denticulatum JACQ.		90	„ „
„ *domesticum* class.	ca. 27 [5])	45	„ „
„ *glutinosum* L'HER.		90	„ „
„ *graveolens* L'HER.	45	90	„ „
„ *quercifolium* AIT.		45	„ „
„ *radula* L'HER. . .	ca. 41 [6])	81	„ „
„ *tomentosum* JACQ.		45	„ „

[1]) Evidently univalent chromosomes are absent in this almost sterile hybrid but sometimes a pair of gemini lie apart on the equatorial plate.

[2]) Classification under Sections is according to ENGLER & PRANTL.

[3]) In midwinter non-conjunction occurred (36 univalents) and gave diads instead of tetrads.

[4]) A few cells showed 72 chromosomes. There was no variation in the albino branches.

[5]) Some of these chromosomes were univalents. In the homeotypic nuclear plates 22 and 23 were the most common numbers, though they varied from 20 to 25.

[6]) Some of these chromosomes appeared to be unvialents.

	n	2n	
OXALIDACEAE			
Oxalis acetosella		22–24	HEITZ, 1927*b*. [1])
„ *adenophylla*		28	„ „
„ *articulata*		14	„ „
„ *articulata* var. *hirsuta* .		14	„ „
„ *asinina*		(28)	„ „
„ *brasiliensis*		14	„ „
„ *bupleurifolia*		10	„ „
„ *caprina*		(20)	„ „
„ *carnosa*		14	„ „
„ *consolida*		14	„ „
„ *crenata*		14	„ „
„ *Deppei*		14	„ „
„ *Drummondii*		14–16	„ „
„ *esculenta*		14	„ „
„ *incarnata*		14	„ „
„ *lasiandra*		28–(32)	„ „
„ *Ortgiesi*		14	„ „
„ *pallescens*		14–16	„ „
„ *pentaphylla*		28–30	„ „
„ *purpurata*		(26)–28	„ „
„ *purpurata* var. *Boviei* .		28	„ „
„ *rhombifolia*		> 80	„ „
„ *rosea*		(14)	„ „
„ *rubella*		ca. 28	„ „
„ *rubra*		(42)	„ „
„ *Smithiana*		(14)	„ „
„ *tenuifolia*		ca. 28	„ „
„ *truncatula*		(42)	„ „
„ *umbrosa*		14	„ „
„ *versicolor*		14	„ „
„ *vespertilionis*		14	„ „
„ *vinata*		(14)	„ „
„ *violacea*		ca 28	„ „
„ *spec.*		ca. 42	„ „
TROPAEOLACEAE			
Tropaeolum canariense		26–30	„ „
„ *hobbianum* . . .		ca. 28	„ „
„ *majus* L.	14		SUGIURA, 1925*a*.
„ *majus*	14		WINGE, 1925; BOLENBAUGH, 1928.
		27–28	HEITZ, 1926.

[1]) Though HEITZ (1927*b*) gives the haploid numbers as half of these given diploid numbers, I have chosen to give these since his figures are all of somatic cells showing the diploid chromosome sets.

TROPAEOLACEAE (continued)

Tropaeolum (continued)	n	2n	
Tropaeolum minus		27–29	HEITZ, 1926.
„ *peregrinum* . . .	12	24	SUGIURA, 1928*b*.
LINACAE			
Linum alpinum JACQ.	18	36	KIKUCHI, 1926.
„ *alpinum* L.	9		DE VILMORIN & SIMONET, 1927*b*
„ *americanum* L. var. *album*	15	30	KIKUCHI, 1926.
„ *angustifolium*		30	TAMMES, 1923.
„ *angustifolium* HUDS. .	9	18	KIKUCHI, 1926.
	15		DE VILMORIN & SIMONET 1927*b*
		32	MARTZENITZINA, 1927.
„ *austriacum* L.	9	18	KIKUCHI, 1926.
		18	MARTZENITZINA, 1927
„ *campanulatum* L. . . .	14		DE VILMORIN & SIMONET 1927*b*
„ *capitutum* KIT.	12	24 (?)	KIKUCHI, 1926.
„ *catharticum* L.	8		DE VILMORIN & SIMONET 1927*b*
		> 57	MARTZENITZINA, 1927.
„ *corymbiferum* DESF. . .	15	30	KIKUCHI, 1926.
		18	MARTZENITZINA, 1927.
„ *flavum* L.		30	(NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
		30, 32	MARTZENITZINA, 1927.
„ *grandiflorum* DESF . .	9		KIKUCHI, 1926.
	8		DE VILMORIN & SIMONET 1927*b*.
		16	(NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
		16, 17	MARTZENITZINA, 1927.
„ *hirsutum* L.	8		DE VILMORIN & SIMONET 1927*b*.
„ *Lewisii* PURSH.	9	18	KIKUCHI, 1926.
„ *maritinum* L.	10		DE VILMORIN & SIMONET 1927*b*.
„ *nervosum* WALDST. . .	15		„ „ „
„ *perenne* L.	9	18	KIKUCHI, 1926.
	9		DE VILMORIN & SIMONET 1927*b*, (NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
		18	MARTZENITZINA, 1927.
„ *punctatum* PR.		18	„ „
„ *salsoloides* LAM. . . .	9		DE VILMORIN & SIMONET, 1927*b*
„ *Sibiricum* DC. (*perenne* L. var.)	9	18	KIKUCHI, 1926.
strictum L.	9		DE VILMORIN & SIMONET, 1927*b*
„ *tenuifolium* L.	9		„ „ „
		18	MARTZENITZINA, 1927.

	n	2n	
LINACEAE (continued)			
Linum (continued)			
Linum usitatissimum		30	(REYNDER) given by TAMMES, 1922.
„ *usitatissimum* GRISEB. .	15		DE VILMORIN & SIMONET 1927b
„ *usitatissimum* L. . . .	15	30	KIKUCHI, 1926.
		32	MARTZENITZINA, 1927.
		30	(NIKOLAJWA) given by EMME & SCHEPELJEVA, 1927.
„ *usitatissimum* L. [1]) . .		32	EMME & SCHEPELJAVA, 1927.
„ *usitatissimum* L. (Race 383)		30	„ „
„ *usitatissimum* L. (Egyptian race)	16	32	„ „ „ „
„ *usitatissimum* var. *crepitans* BÖNNINGH . . .	15, 16	32	„ „ „ „
RUTACEAE			
Erythrochiton brasiliense . . .		89—90	HEITZ, 1926.
(*Fortunella margarita* × *Citrus aurantifolia*) × *Fortunella hindsii*	13, 13+1$_1$		LONGLEY, 1926b.
POLYGALACEAE			
Epirrhizanthes elongata BL. . .	24 [2])		WIRZ, 1910.
	22		SHADOWSKY, 1911.
Salomonia (= *Epirrhizanthes*) *cylindrica* BL.)	11		SHADOWSKY, 1911.
EUPHORBIACEAE			
Daphhniphyllum macropodium MIQ.	16 [3])		SINÔTO, 1928a.
„ *macropodium*	16		SIGUURA, 1928a.
Mercurialis annua	6	12	MALTE, 1908, 1910.
	7		STRASBURGER, 1909a, b.
	8	16	STRASBURGER, 1910b; YAMPOLSKY, 1925.
		16 & 32 [4])	(NIHOUS) given by de Litardiere, 1925.
Mercurialis perennis	> 32		MEURMAN, 1925a.
Ricinus communis		20 [5])	NĚMEC, 1910a; SUESSENGUTH, GUTH, 1921.
„ *communis* . . L. .		20	TAYLOR, 1926

[1]) Fifteen races from different geographical areas were investigated and of these only one showed 2n = 30.

[2]) Counts showed variation from 20 to 24.

[3]) A pair of unequal chromosomes were distinguishable.

[4]) Sixteen chromosomes were found in the cells of the plerome of the root-tip and 32 in the cells of the periblem.

[5]) Syndiploid nuclei were found in roots treated by chloral hydrate.

EUPHORBIACEAE (continued)	n	2n	
Ricinus (continued)			
Ricinus zanzibarensis		20	NĚMEC, 1910*a*.
Hevea brasiliensis MÜLL. ARG.	8		HEUSSER, C., 1919.
Euphorbia helioscopia		12	NĚMEC, 1910*a*.
„ *hypericifolia* . . .		16	MALTE, 1908.
„ *procera* BIEB. . . .	ca. 8		MODILEWSKI, 1910
Poinsettia (= *Euphorbia*) *pulcherrima* R. GRAH.	10		CARANO, 1915.
Euphorbia splendens	12		WENIGER, 1917
SAPINDALES			
EMPETRACEAE.			
Empetrum hermaphroditum (LGE.) HAGERUP	26 [1])		HAGERUP, 1927.
„ *nigrum*	ca. 30		SAMUELSON, 1913.
„ *nigrum* L.	13 [2])		HAGERUP, 1927.
CORIARIACEAE			
Coriaria myrtifolia	ca. 40	ca 80	GRIMM, 1912.
ANACARDIACEAE			
Rhus Toxicodendron	15		„ 1912.
STAPHYLEACEAE			
Staphylea pinnata	12 [3])		WINGE, 1917.
„ *trifolia* L.	ca. 36		MOTTIER, 1914.
ACERACEAE			
Acer carpinifolium		52	TAYLOR, 1920.
„ *negundo* L.	13		DARLING, 1909.
	12 or 14		MOTTIER, 1914.
„ *negundo*	13		TAYLOR, 1920.
„ *pseudoplatanus*	26	52	„ „
„ *rubrum*	40		DARLING, 1912.
	36		MOTTIER, 1914; TAYLOR, 1920.
	ca. 50	88–94	TAYLOR, 1920.
	68–75		„ „
„ *saccharinum*	26	52& ca.91	„ „
„ *saccharum*	13		„ „
HIPPOCASTANACEAE			
Aesculus arguta BUCKLEY [4]) .	20		HOAR, 1927.
„ *discolor* var. *mollis* N. var. [4])	20		„ „
„ *georgiana* SARG. [4]) . .	20		„ „

[1]) Two pairs of XY chromosomes, similar to those found in *E. nigrum* L. were found in the divisions of the pollen-mother-cells.
[2]) A pair of larger XY chromosomes was found in the divisions of pollen-mother cells.
[3]) Once 13 chromosomes were found.
[4]) Meiotic division was very irregular.

HIPPOCASTANACEAE (continued)	n	2n	
Aesculus (continued)			
Aesculus glabra WILLD [1] . . .	20		HOAR, 1927.
„ *glabra* far. *leucodermis* SARG. [2]	20		„ „
„ *harbisonii* SARG. (= *A. discolor* var. *mollis* N. var. × *A. georgiana* SARG.) [2] . .	20		„ „
„ *hippocastanum* L. [1] .	20		„ „
„ *hippocastanum* var. *Baumanni* SCHNEID..	20		„ „
„ *mutabilis* var. *induta* N. *hyb.* SARG. [2] . .	20		„ „
„ *mutabilis* var. *pendulifolia* SARG. (= *discolor* var. *mollis* N. var. × *A. neglecta* SARG. [2]	20		„ „
„ *octandra* MARSH (Sweet Buckeye) (= *A. flava Ait*) [3] . .	20		„ „
„ *octandra* var. *discolor* REHDER [2]	20		„ „
„ *octandra* var. *hybrida* D. C. Sargant (= *A. octandra* MARSH × *A. pavia* L.) [2] . . .	20		„ „
„ *rubicunda* LOIS (*A. carnea* HAYNE) (= *A. hippocastanum* L. × ? *A. pavia* L.) [2] .	20		„ „
„ *rubicunda* var. *brioti* . CARS. (*A. hippocastantum* L. × *A. pavia* L.) [2]	40		„ „
„ *woerlitzensis* KOHNE. E. [2]	20		„ „
BALSAMINACEAE			
Impatiens pallida NUTT. . . .	12		RAITT, 1916.
„ *parviflora*		20	HEITZ, 1926.
„ *Sultani* HOOK. . . .	ca. 7		OTTLEY, 1918.

[1]) Meiotic division was quite regular.
[2]) Meiotic division was very irregular.
[3]) Meiotic division was regular except in cells of one tree growing in the Harvard Bot. Gard. under the name *A. flava*.

RHANNALES	n	2n	
VITACEAE			
Cissus gongyloides		32	LANGLET, 1927*b*.
MALVALES			
TILIACEAE			
Tilia platyphyllos	30–33 [1])		SVENSSON-STENAR, 1925.
MALVACEAE			
Malva palmata	ca. 20		„ „ „
„ *pusilla*	20–30		„ „ „
Sidalcea neomexicana A. GRAY.	13		TJEBBES, 1928.
Hibiscus rosa sinensis	72		YOUNGMAN, 1927
„ *tricuspis*	40		„ „
„ *tiliaceus*	48		„ „
Thespesia populnea	8, 10, 13[2])		„ „
Gossypium barbadense		52	(NIKOLAJEWA) given by ZAITZEV, 1923.
	8, 13 [3])		YOUNGMAN, 1927.
„ *barbadense* var. *maritima* WATT. . . .	26		DENHAM, 1924.
„ *barbadense* L. var. *Pima* (Egyptian) .	26		BEAL, 1928.
„ *barbadense* L. (Sea Island Commercial var.)	26		„ 9928.
„ *herbaceum* L. [4]) . .		26	(NIKOLAJEWA) given by ZAITZEV, 1923.
„ *hirsutum* L. [4]) . . .		52	(NIKOLAJEWA) given by ZAITZEV, 1923.
„ (Commercial cotton, near *G. hirsutum*) .	26		DENHAM. 1924.
„ *hirsutum* L. var. Miller	26		BEAL, 1928.
„ *hirsutum* L. var. Trice	26		„
„ *hirsutum* L. var. Triumph	26		„ „

[1]) From 90 to 100 chromosomes were counted in a metaphase plate in an edosperm cell.

[2]) On heterotypic equatorial plates 13 bodies massed together at the centre as 8. In hemeotypic equatorial plates 10 and 13 chromosome bodies appeared respectively in the sister cells and in the pollen tetrad, three nuclei contained 10 chromosomesand one nuclei, 13.

[3]) Only 8 bodies were seen on the equatorial plate.

[4]) A hybrid was obta8ned between *G. herbaceum* L. (*Buchaskaja Gusa*) and *G. hirsutum* L. var. *laciniata* M. but the chromosome number was not determined.

MALVACEAE (continued)	n	2n	
Gosypium (continued)			
Gossypium mexicanum		52	(NIKOLAJEWA) given by ZAITZEV, 1923.
Acala (*G. mexicanum* type) . .	26		DENHAM, 1924.
Gossypium Nanking		26	(NIKOLAJEWA) given by ZAITZEV, 1923.
„ *obtusifolium*. . . .		26	(NIKOLAJEWA) given by ZAITZEV, 1923.
„ *punctatum*		52	(NIKOLAJEWA) given by ZAITZEV, 1923.
„ *barbadense* × *herbaceum*	28		CANNON, 1903*a*.
STERCULIACEAE			
Theobroma cacao	8	16	KUYPER, 1914.
		16	CHEESMAN, 1927.
CAMELLIACEAE			
Camellia theifera (Griff.) DYER (= *Thea sinensis*) . . .	15		COHEN STUART 1916.
PARIETALES			
GUTTIFERAE			
Hypericum calycinum . . .	10		CHATTAWAY, 1926.
„ *elegans*	16		„ „
„ *humifusum*	8		WINGE, 1925; CHATTAWAY, 1926.
„ *pulchrum*.	9		CHATTAWAY, 1926.
„ *quadangrulum*. . .	8		WINGE, 1925; CHATTAWAY, 1926.
Garcinia Treubii PIERRE . . .		ca. 48	TREUB, 1911.
ELATINACEAE			
Elatine Hydropiper L.	20		FRISENDAHL, 1927.
TAMARICACEAE			
Myricaria germanica DESV. . .	12		FRIESENDAHL, 1912.
CISTACEAE			
Cistus albidus L.	9		CHIARUGI, 1925.
„ *laurifolius* L.	9		„ „
„ *monspeliensis* L.	9		„ „
„ *salviaefolius*.	8		„ 1924.
„ *salviaefolius* L.	9		„ 1925.
„ *villosus* L.	9		„ „
Helianthemum alpestre (JACQ.) DUNAL. . . .	16		„ „
„ *apenninum* (L.) LAM. et DC. .	16		„ „

CISTACEAE (continued)	n	2n	
Fumana arabica (L.) SPACH. = *Helianthemum arabicum* PERS.	16		CHIARUGI, 1925.
„ *procumbens* GREN. GODR. *Helianthemum Fumana* MILL. . . .	16		„ „
Helianthemum Chamaecistus MILL . . .	16		„ „
Tuberaria guttata	24		„ 1924.
„ *guttata* (L GROSS = *Helianthemum guttatum* MILL. . . .	24		„ 1925.
Halimium halimifolium (L.) WILLK et LANGE (= *Helianthemum halimifolium* WILLD.	9		„ „
Helianthemum ledifolium (L.) MILL.	8		„ „
„ *polifolium* . . .	8		„ „
VIOLACEAE			
Hybanthus parviflorus (VENT.) BAILL.	12		HEILBORN, 1926.
VIOLA [1])			
Section Dischidium			
Viola biflora L.	6		CLAUSEN, J., 1926, 1927*b*.
„ *biflora*	6	12	GERSHOY, 1928.
Section Chamaemelanium			
Viola canadensis.	12	24	GERSHOY, 1928.
„ *eriocarpa*	6	12	„ „
„ *glabella*	6		MIYAJI, 1913, 1927*a*.
„ *glabella* (American) . . .	12	24	GERSHOY, 1928.
„ *lobata*.	6	12	„ „
„ *ocellata*	6	12	„ „
„ *praemorsa*	15	30	„ „
„ *pubescens*	6	12	„ „
„ *purpurea*	15	30	„ „
„ *rugulosa* GREENE. . . .	12		CLAUSEN, J., 1926, 1927*b*.
„ *rugulosa*	12	24	GERSHOY, 1928.
„ *sarmentosa* .Q.	21	42	„ „
Section Melanium			
Viola alpestris DC. (W. BECKR.)	13		CLAUSEN, J., 1926, 1927*b*.
„ *arvensis* MURR. [2]). . . .	17		„ J., 1921, 1922, 1924, 1926, 1927*b*.

[1]) Classification under sections is according to ENGLER & PRANTL.

[2]) Three different types, Line 52, Type C, and Line I were used.

VIOLACEAE (continued) . . .	n	2n	
VIOLA (continued)			
Section Melanium (continued)			
Viola arvensis.	18	36	GERSHOY, 1928.
„ *calcarata* L. [1])	20		CLAUSEN, J., 1926, 1927*b*.
„ *cenisea* L.	10		CLAUSEN, J., 1927*b*.
„ *cornuta* :.	10		HEILBORN, 1926.
	11		CLAUSEN, J., 1926, 1927*b*.
„ *cornuta*	21	42	GERSHOY, 1928.
„ *declinata* WALDST. et KIT.	10		CLAUSEN, J., 1927*b*.
„ *elegantula* SCHOTT [2]) . .	10		CLAUSEN, J., 1926, 1927*b*.
„ *Kitaibeliana* ROEM. et SCHULT.	7		CLAUSEN, J., 1927*b*.
„ *Kitaibeliana* ROEM. et SCHULT (another variety)	ca. 12		CLAUSEN, J., 1927*b*.
„ *Kitaibeliana* ROEM. et SCHULT (a stout variety)	18		CLAUSEN, J., 1926, 1927*b*.
„ *lutea*	24	48	GERSHOY, 1928.
„ *lutea* HUDS.	24		CLAUSEN, J., 1926.
„ *lutea* HUDS. var. *calaminaria* LEJ.	ca. 24		„ , 1927*b*.
„ *lutea* HUDS. *subs. elegans* (KIRSCHL.) W. BECKR. .	24		„ „
„ *Munbyana* BOISS. et REUT. var. *Battandieri* (W. BECKR. pro spec.)	30		„ „ 1926, 1927*b*.
„ *orphanidis* BOISS. . . .	$10+1_1$		„ „ 1927*b*.
„ *orthoceras* LEDEB. . . .	11		„ „ 1926, 1927*b*.
„ *Raffinesquii*	18	36	GERSHOY, 1928.
„ *rothomagensis* DESF. . .	17		CLAUSEN, 1926, 1927*b*.
„ *rothomagensis*	18	36	GERSHOY, 1928.
„ *tricolor* var.	12	24	„ „
„ *tricolor* var. α	12	24	„ „
„ *tricolor* var. β	12	24	„ „
„ *tricolor* var. γ	12	24	„ „
„ *tricolor* L.	13		CLAUSEN, J., 1921, 1922, 1924, 1926, 1927*b*.
„ *tricolor* L. type *alba* . . .	13		CLAUSEN, J., 1927*b*.
„ *tricolor* L. type *hortensis* .	13		„ „ „
„ *tricolor* L. type *lutea* . .	13		„ „ „
„ *tricolor* L. type *maritima, rosea*	13		„ „ „

[1]) CLAUSEN (1927) states that another type under the name *V. Bertolonii Salis* (= *corsica* ROUY et FOUC.) had 2n = 40.
[2]) This is synonymous with *V. latisepala* WETTST. and *V. bosniaca* FORMANEK.

VIOLACEAE (continued)	n	2n	
VIOLA (continued).			
Section N o m i n i u m (continued)			
Viola tricolor L. type *violacea*	13 [1])		CLAUSEN, J., 1927*b*.
„ *elegantula* SCHOTT, *V. declinata* W. et K. spec. „*Valderia*"	10		„ „ 1926.
„ *Valderia* [2])	10		„ „ 1927.
„ *Zoysii* WOLF.	20		„ „ 1927*b*.
„ (commercial variety) („*Florencicum*"	24	48	GERSHOY, 1928.
„ (commercial variety) „*pansy*"	24	48	„ „
Section N o m i n i u m			
Viola adunca	9	18	„ „
„ *affinis*	27	54	„ „
„ *blanda*	24	48	„ „
„ *Brittoniana*	27	54	„ „
„ *canina* REHB.	36		CLAUSEN, J., 1926, 1927*b*.
„ *chinensis*	24	48	GERSHOY, 1928.
„ *conspersa*	9	18	„ „
„ *cucullata* AIT.	26		CLAUSEN, J., 1927*b*.
„ *cucullata*	27	54	GERSHOY, 1928.
„ *diffusa*	26		(MIYAJI, 1913), given by ISHIKAWA, 1916.
„ *elatior* FRIES.	20		CLAUSEN, J., 1927*b*.
„ *elatior*	21	42	GERSHOY, 1928.
„ *emarginata*	27	54	„ „
„ *epipsila* LEDEB.	12		CLAUSEN, J., 1926, 1927*b*.
„ *fimbriatula*	27	54	GERSHOY, 1928.
„ *grypoceras* A. GRAY. . .	10		MIYAJI, 1913, 1927*a*.
„ *hirsutula*	27	54	GERSHOY, 1928.
„ *hirta* L..	10		HEILBORN, 1926; CLAUSEN, J., 1926, 1927*b*.
„ *Howellii*	21	42	GERSHOY, 1928.
„ *incognita*	21	42	„ „
„ *japonica* LANGSD. . . .	24		MIYAJI, 1913, 1927*a*.
„ *labradorica*	9	18	GERSHOY, 1928.
„ *lanceolata*	12	24	„ „
„ *Langloisii*	27	54	„ „
„ *latiuscula*	27	54	„ „
„ *Lovelliana*	27	54	„ „

[1]) Irregularities occurred in the meiotic divisions of this type.
[2]) CLAUSEN (1927) states that the plant examined was not *V. Valderia* ALL. but corresponded to *V. Valderia* RCHB., generally referred to as *V. heterophylla* BERTOL.

VIOLACEAE (continued)	n	2n	
VIOLA (continued)			
Section Nominium (continued)			
Viola mirabilis L.	10		CLAUSEN, J., 1926, 1927*b*.
„ *Missourensis*	27	54	GERSHOY, 1928.
„ *neglecta* M. BIEB.	20		CLAUSEN, J , 1927*b*.
„ *nephrophylla*	27	54	GERSHOY, 1928.
„ *nipponica* MAXIM.	10		MIYAJI, 1913, 1927*a*.
„ *odorata*	7–11	18	GERSHOY, 1928.
„ *odorata* L.	10		(WINGE, 1921) given by CLAUSEN, J., 1921; HEILBORN, 1926; CLAUSEN, J., 1926, 1927.
„ *okuboi* MAKINO (= *V. Keisksi* MIQ. var.) [1])	12		MIYAJI, 1913, 1927*a*.
„ *okuboiglabra* MAKINO	12		MIYAJI, 1913, 1927*a*.
„ *pallens*	12	24	GERSHOY, 1928.
„ *palmata*	27	54	„ „
„ *palustris*	24	48	„ „
„ *palustris* L. [2])	likely 24		CLAUSEN, J., 1927*b*.
„ *papilionacea*	27	54	GERSHOY, 1928.
„ *Patrini* DC.	36(?)		MIYAJI, 1913, 1927*a*.
„ *Patrini* var. *chinensis* (= *V. Mandshurica* W. BECKER) [1])		48	(MIYAJI, 1913), given by ISHIKAWA, 1916.
„ *pedata*	27	54	GERSHOY, 1928.
„ *pedatifida*	27	54	„ „
„ *phalacrocarpa* MAXIM.	12		MIYAJI, 1913, 1927*a*.
„ *pinnata* L.	ca. 24		CLAUSEN, J., 1927*b*.
„ *pinnata*	24	48	GERSHOY, 1928.
„ *primulifolia*	12	24	„ „
„ *renifolia*	12	24	„ „
„ *rostrata*	9	18	„ „
„ *rotundifolia*	6	12	„ „
„ *sagittata*	27	54	„ „
„ *Selkerkii*	12	24	„ „
„ *septemloba*	27	54	„ „
„ *septentrionalis*	27	54	„ „
„ *silvestris* REHB.	10		CLAUSEN, J., 1926, 1927*b*.
„ *sylvestris*	21	42	GERSHOY, 1928.
„ *sororia*	27	54	„ „
„ *stagnina* KIT.	10		CLAUSEN, J., 1926, 1927*b*.

[1]) Synomymy according to CLAUSEN, J., 1927*b*.
[2]) By calculation from the hybrid *V. epipsila* LEDEB. × *V. palustris* L.

VIOLACEAE (continued)	n	2n	
Viola (continued).			
	probably 10		HEILBORN, 1926
Viola striata	9	18	GERSHOY, 1928.
„ *triloba*	27	54	„ „
„ *verecunda* A. GRAY . . .	10		MIYAJI, 1913, 1927*a*.
„ *villosa*	27	54	GERSHOY, 1928.
„ *athois* W. BECKER" . .	12		CLAUSEN, J., 1926
„ *calcarata grandiflora*" . .	20 & 22 [1])		„ „ 1927*b*.
„ *cornuta hybrida*" (*V. Williamsii* WITTR.)	ca. 24		„ „ „
„ *gracilis*"	$24+4_{\frac{1}{2}}$		„ „ „
„ *Gustav Wermig*"	11		„ „ „
„ *lutea grandiflora*". . . .	19 & 25 [2])		„ „ „
„ *splendida*"	$16+9_{\frac{1}{2}}$		„ „ 1927*b*
„ *alpestris* × *V. tricolor* .	$26_{\frac{1}{2}}$		„ „ „
„ *arvensis* MURR. type C. × × Line 52 F_1 (Plant V. 773)	$16, 15+4_{\frac{1}{2}}$		„ „ „
„ *arvensis* MURR. type C. × Line 52 F_2	$14+4_{\frac{1}{2}}$		„ „ „
„ *arvensis* MURR. (Line 52) *V. tricolor* L. [3]) F_1 . . .	$13+4_{\frac{1}{2}}$ [4]), $12+6_{\frac{1}{2}}$		„ „ „
„ *arvensis* MURR. (Line 52) × *V. tricolor* L. F_1 (sterile types)	14, 17–18, $13+2_{\frac{1}{2}}$		„ „ „

[1]) In one anaphase plate there were 20 and in another 22 chromosomes.

[2]) In the homoeotypic telophase, 19 were found at one pole and 25 at the other.

[3]) Five tricolor types were used: *tricolor typica* (*violacea*) Line 504, 2; *tricolor alba* Line 320, 3; *tricolor lutea* Line 511, 4; *tricolor maritima, rosea,* Line 322 and 5; *tricolor hortensis, velutina* 3, Line 519.

[4]) In heterotypic anaphase the univalents distributed at random to either pole, sometimes a few being left out of the daughter nuclei. At times 1 or 2 univalents split Tat the heterotypic metaphase.

VIOLACEAE (continued)	n	2n	
Viola (continued)			
Viola arvensis MURR. (Line 52) × *V. tricolor* F_2 . . .	13–16, $\frac{13\text{–}14+1_I\text{–}4_I}{2}$ [1])		CLAUSEN, J., 1927*b*.
„ *arvensis* MURR (Line 52) × *V. tricolor* F_3	13–16		„ „
„ *arvensis* MURR. (Line 52) × *V. tricolor* F_4 . . .	14–16(?)		„ „
„ *cornuta* L. × *V. elegantula* SCHOTT	10–11		„ „ „
„ *epipsila* LEDEB. × *V. palustris* L.	$\frac{12+12_I}{2}$ [2])		„ „ „
„ *hirta* × *V. odorata* . . .	$\frac{9\text{–}6+1\text{–}8_I}{2}$		HEILBORN, 1926
„ *lutea* HUDS. × *V. tricolor* L.	ca. 24 [2])		CLAUSEN, J., 1927*b*.
„ *odorata* × *V. hybrida*(?)	10		„ „ „
„ *Riviniana* × *V. silvestris* (spontaneous hybrid) .	20 [3])		„ „ „
„ *tricolor* L. type *lutea* × type *violacea* F_1 . . .	13		„ „ 1926.
„ *tricolor* L. type *lutea* × type *maritima rosea* F_1 .	13		„ „ „
„ *tricolor* L. (*violacea*) × *V. arvensis* MURR. F_1 (Plant V 209–3)	17–18, $13+2_I$		„ „ „
„ *tricolor* L. (*violacea*) × *V. arvensis* MURR. F_2 (Plants 336–1, 2, 3) . .	21–25		„ „ „
„ *tricolor* L. (*violacea*) × *V. arvensis* MURR. F_3 (Plants 615–1, 2, 4) . .	21–23		„ „ „
„ *tricolor* L. (*violacea*) × *V. arvensis* MURR. F_4 (Plants 754–1, 3, 4, 6)	20–25		„ „ „

[1]) In the meiotic divisions of F_2, conditions varried from regular to very irregular divisions, from including 1 to many univalents, but 13 bivalents + 1—4 univalents occurred most frequently.

[2]) The bivalent chromosomes could not be clearly distinguished but 9—11 univalents were visible.

[3]) The presence of a number of univalents and irregular divisions characterized this hybrid.

PASSIFLORACEAE	n	2n	
Viola (continued)			
Viola tricolor L. (*violacea*) × *V. arvensis* MURR. F_3. . (Plant 616.2 (new type-constant)	14		CLAUSEN, J., 1926.
„ *tricolor* × *V. arvensis* off-spring [1])		28	„ „ 1927*a*.
„ *tricolor* L. (*violacea*) × V. *arvensis* MURR. = *Viola hyperchromatica* n. sp. .	21–23		„ „ 1926.
Passiflora coerulea		18	HEITZ, 1926.
„ *princeps coccinea* .	9	18	„ „
CARICACEAE			
Carica papaya		18	HEILBRON, 1922.
	9		MEURMAN, 1925*b*
„ *papaya* L.	9	18	SUGIURA, 1927.
DATISCACEAE			
Datisca cannabina L. .	11 [2])		SINOTO, 1928*a*.
BEGONIACEAE			
BEGONIA [3])			
Section Augustia [3])			
Begonia Dregei		28–(30)	HEITZ, 1927*b*.
Section Rosthrobegonia			
Begonia Engleri		20–24	„ „
Section Haagea			
Begonia dipetala		ca 28	„ „
Section Platycentrum			
Begonia cateayana		20–24	„ „
„ *Henslayana*		20–24	„ „
Section Petermannia			
Begonia isoptera		24–28	„ „
Section Scheidweileria			
Begonia luxurians		> 20	„ „
Section Ewaldia			
Begonia rigida		26/28	„ „
„ *valida*		36/38	„ „
Section Lepsia			
Begonia foliosa		> 50–60	„ „
„ * *Jamesoniana*		34–42	
Section Pritzelia			„ „
Begonia dichotoma		34/36	„ „

[1]) The plants examined were the result of crossing normal ♂ plants with self sterile ♀ ones. Cytological conditions showed regularity of division.

[2]) A pair of unequal chromosómes was distinguishable.

[3]) This classification under sections is according to ENGLER & PRANTL.

BEGONIACEAE (continued)	n	2n	
Begonia (continued)			
Begonia echinosepala		> 30	HEITZ, 1927*b*.
„ *sanguinea*		> 30/40	„ „
„ *scandens*		(36)/42	„ „
„ *vitifolia*		(33)–36	„ „
Section Gaertia			
Begonia argyrostigma (= *maculata*?)		> 40	„ „
„ *maculata*		30/40	„ „
„ *undulata*		> 40	„ „
Section Tittelbachia			
Begonia fuchsioides		> 40	„ „
Section Huszia			
Begonia Baumannii		24–28	„ „
Section Magnusia			
Begonia carolinifolia		28	„ „
„ *conchaefolia*		24–28	„ „
„ *crassicaulis*		ca. 28	„ „
„ *heradaefolia*		28	„ „
„ *imperialis*		28/(30)	„ „
„ *incana*		30/40	„ „
„ *involucreta*		20	„ „
„ *manicata*		24–30	„ „
„ *metallica*		ca. 28–30	„ „
„ *venosa*		ca. 28	„ „
Section Donaldia			
Begonia unmifolia		24—28	„ „
Section Begoniastrum			
Begonia acerifolia		32—36	„ „
„ *incarnata*		> 60/70 (towards 100)	„ „
„ *Schmidtiana*		29–32	„ „
Section (?)			
Begonia assamica		(24)–26–(28)	„ „
„ *spec. Java*		24–28	„ „
„ *mexicana*		27–28	„ „
MYRTIFLORAE			
PENAEACEAE			
Sarcocolla minor	11–12		STEPHENS, 1909.
THYMELAEACEAE			
Daphne alpina	9		STRASBURGER, 1909*a*.
„ *Kiusiana*	9	18	OSAWA, 1913*b*.

THYMELAEACEAE (continued)	n	2n	
Daphne (continued)			
Daphne Mezereum	9		STRASBURGER, 1909*a*
„ *odora*	12–14	28	OSAWA, 1913*b*.
„ *Pseudomezerum* . . .	9	18	„ „
Wikstroemia canescens	9		STRASBURGER, 1910*a*
„ *indica* (L.) C. A. MEY	26		WINKLER, 1906.
„ *indica*	26		STRASBURGER, 1909*a*.
		20–28	„ 1910*d*.
Gnidia carinata THBG.	9		„ 1909*a*.
ELAEAGNACEAE			
Elaeagnus angustifolia	6	12	SOBOLEWSKA, 1926.
Hippophaë rhamnoides	10	20	„ „
LYTHRACEAE			
Lythrum hyssopifolium	10		TISCHLER, 1928*b*
„ *Salicaria*	ca. 24		„ 1917.
		ca. 48	„ 1918*a*.
	25		„ 1928*b*.
MELASTOMATACEAE			
Centradenia floribunda		24–26	HEITZ, 1926.
Berthelomia aenea		28—32	„ „
Memecylon floribundum BLUME		24 [1])	RUYS, 1925.
Mouriria anomala PULLE . .		24 [1])	„ 1924 [2]), 1925.
OENOTHERACEAE			
Epilobium adnatum	18		SCHWEMMLE, 1924*a*, *b*.
„ *angustifolium* . . .	18		MICHAELIS, 1925
	18 [3])		„ 1926.
„ *hirsutum*	18 [3])		HÅKANSSON, 1924*a*; SCHWEMMLE, 1924*a*, *b*; MICHAELIS, 1926, 1928.
	18	36	MICHAELIS, 1925.
„ *hirsutum* (*semi-gigas mutant*	24–30	54	„ 1928.
„ *montanum*	18		HÅKANSSON, 1924*a*; SCHWEMMLE, 1924*a*, *b*; LEHMANN & SCHWEMMLE, 1927.
„ *parviflorum*	18		SCHWEMMLE, 1924*a*, *b*; LEHMANN & SCHWEMMLE, 1927.

[1]) In previous list. GAISER (1926), this number was incorrectly given in the haploid column.

[2]) RUYS (1924) had counted 12 sets of 3 chromosomes in the endosperm nuclei.

[3]) With low temperatures irregular pairing and even lack of pairing of the chromosomes was observed in diakinesis and unequal distribution of the chromosomes to the poles in both pollen- and embryo-sac-mother cells.

OENOTHERACEAE (continued)	n	2n	
Epilobium (continued)			
Epilobium roseum	18		SCHWEMMLE, 1924*a*, *b*; MICHAELIS, 1925.
,, *gigas* (*E. montanum* × *E. parviflorum*	18		LEHMANN & SCHWEMMLE, 1927
,, *gigas* × *E. montanum* (2472) . . .		36	LEHMANN & SCHWEMMLE, 1927.
,, *gigas* × *E. parviflorum* (2471) . . .		36	,, ,, ,, ,,
,, *hirsutum* × *E. luteum*		54 [1])	MICHAELIS, 1928.
Jussieua repens L.	8		SINÓTO, 1928*b*.
Oenothera agari	14 [2]) $\overline{2}$		SHEFFIELD, 1927.
,, *ammophila* FOCKE .	14 [3]) $\overline{2}$		,, ,,
,, *argillicola* MACKENZIE		14	BOEDIJN, 1924*a*, 1925*b*.
,, *Bauri*		14	,, ,, ,,
,, *Berteriana*	7	14	SCHWEMMLE, 1927.
,, *Biennis*	7		MACAVOY, 1913; KLEINMAN, 1923.
		14	GATES 1909*a*; DAVIS, 1910; STOMPS, 1912*a*, 1916, 1925, 1928; GOLDSCHMIDT, 1913; RENNER, 1914; DE VRIES, 1915*a*, 1925*a*; VAN OVEREEM, 1921, 1922; BOEDIJN, 1924*a*, 1925*b*.
	14 [4]) $\overline{2}$		CLELAND, 1923, 1925, 1926*a*, 1928, (1926) 1929; EMERSON, 1924; VALCANOVER, 1926; KIHARA, 1927*a*.
,, *Biennis albinervis* .		15	VAN OVEREEM, 1921, 1922.
,, *Biennis cana* . . .		15	DE VRIES, 1925*a*.
,, *Biennis Chicago* . .		14	BOEDIJN, 1924*a*, 1925*b*.
,, *Biennis cruciata* . .		14	STOMPS, 1928.

[1]) Fifty-two was the highest number of chromosomes actually counted.

NOTE: The foot-notes on *Oenothera* refer to the arrangement of chromosomes (paired or in circles) found in diakinesis. Thus the conditions are briefly indicated along with the investigator's name. All references on *Oenothera* from GAISER (1926) have been included here.

[2]) Circles variable (SHEFFIELD, 1927).

[3]) Circle of 12 + 1 pair (SHEFFIELD, 1927).

[4]) Circle of 6 & circle of 8 (CLELAND, 1923, 1926, 1928, (1926) 1929; VALCANOVER, 1926, KIHARA 1927*a*). EMERSON (1924) states there was no pairing.

OENOTHERACEAE (Continued)	n	2n	
Oenothera (continued)			
„ *Biennis cruciata gigas*		28	STOMPS, 1925.
„ *Biennis gigas* . . .		28	„ „
„ *Biennis gigas nanella.*		28	„ „
„ *Biennis nanella* . .		14	„ 1928.
„ *Biennis lata*		15	GATES & THOMAS, 1914; DE VRIES, 1915*a*; 1925*a*.
„ *Biennis latifolia* . .		16	VAN OVEREEM, 1921, 1922
„ *Biennis liquida* . .		15	DE VRIES, 1925*a*.
„ *Biennis militaris* . .		15	„ „ „
„ *Biennis pallescens.* .		15	„ „ „
„ *Biennis scintillans* .		15	STOMPS, 1928.
„ *Biennis semi-gigas* .		21	STOMPS, 1912*b*, 1914, 1925; VAN OVEREEM, 1921, 1922.
		14	STOMPS, 1928.
„ *Biennis sulfurea* . .	$\frac{14}{2}$ [1])		EMERSON, 1924; CLELAND, 1926*a*, 1928, (1926), 1929.
„ *Biennis sulfurea gigas*		28	STOMPS, 1928.
„ *Cockerelli* BARTLETT		14	BOEDIJN, 1924*a*, 1925*b*.
	$\frac{14}{2}$ [2])		OELKERS, 1926.
„ *cruciata* NUTT (*O. stenomeres*)		14	STOMPS, 1912*a*, 1916; BARTLETT, 1915*a*; BOEDIJN, 1924*a*, 1925*b*.
„ *stenomeres* mut. *gigas*		28	(ARZBERGER), given by BARTLETT, 1915*a*, *b*.
„ *disjuncta*		14	BOEDIJN, 1924*a*, 1925*b*.
„ *eriensis*	$\frac{14}{2}$ [3])		SHEFFIELD, 1927.
„ *franciscana* BARTLETT	$\frac{14}{2}$ [4])		CLELAND, 1922, 1923, 1924, 1925, 1928, (1926), 1929; (CLELAND) given by SHULL 1928.
		14	BOEDIJN, 1924*a*, 1925*b*.
„ *franciscana sulfurea*	$\frac{14}{2}$ [5])		CLELAND, 1923, 1924, 1925, 1928, (1926), 1929.

[1]) Circle of 6 & circle of 8 (CLELAND, 1928, (1926) 1929). EMERSON (1924) states there was no pairing.

[2]) Circle of 12 or 14 (OELKERS, 1926).

[3]) Circle of 14 (SHEFFIELD ,1927).

[4]) Circle of 14 (CLELAND, 1922); circle of 4 or 5 (CLELAND, 1928, Cleland, given by SHULL, 1928; 3 rings linked to circle of 4 (CLELAND, (1926) 1929); another form, no circles (CLELAND, 1928, (1926) 1929, CLELAND, given by SHULL, 1928).

[5]) One form, circle of 12 + 1 pair (CLELAND, 1924, 1928); another form, 7 pairs (CLELAND, 1928).

OENOTHERACEAE (Continued)	n	2n	
Oenothera (continued)			
Oenothera franciscana sulfurea (dwarf)	7 [1]		EMERSON, 1928.
„ *furca*		14	BOEDIJN, 1924*a*, 1925*b*.
„ *germanica*		14	„ „ „
„ *glauca*	14		SCHWEMMLE, 1924*b*.
„ *grandiflora* AIT. . .	7 [2]		DAVIS, 1919; CLELAND, 1928, (1926), 1929.
		14	BOEDIJN, 1924*a*, 1925*b*.
		15	VAN OVEREEM, 1921.
„ *grandiflora* var. *gigas*	14		DE VRIES, 1918*c*.
		28	VAN OVEREEM, 1921, 1922; BOEDIJN, 1924*c*.
„ *grandiflora* var. *gigas nanella*		27	VAN OVEREEM, 1921.
„ *grandiflora gigas ochracea*.		28	BOEDIJN, 1924*c*.
„ *grandiflora semi-gigas*		21	DE VRIES, 1918*c*.
„ *Hookeri*		14	SCHWEMMLE, 1924*b*; BOEDIJN, 1924*a*, 1925*b*; MICHAELIS, 1928.
	7 [3]		SCHWEMMLE, 1924*b*; CLELAND, 1928.
„ *Lamarckiana* . . .	7 [4]	14	LUTZ, 1907, 1908, 1916; GEERTS, 1907, 1908*a*, *b*, 1909; GATES, 1907*b*, 1908*a*, *b*, *c*, 1909*b*, 1915*a*; DAVIS, 1911; GATES & THOMAS, 1914; RENNER, 1914; STOMPS, 1912, 1916; BOEDIJN, 1920, 1924*a*, *b*, 1925*a*, 1925*b*; HABERLANDT, 1921; VAN OVEREEM, 1921, 1922; SINOTO, 1922; DE VRIES & BOEDIJN, 1923, 1924*a*, 1925*a*, *b*; CLELAND, 1923, 1925, 1928, (1926), 1929; HÅKANSSON, 1924*b*, 1926*b*; LELIVELD, 1928.

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[1]) Seven pairs (EMERSON, 1928).
[2]) Seven pairs (DAVIS, 1909, CLELAND, 1928, (1926) 1929).
[3]) Seven pairs (SCHWEMMLE, 1924*b*; CLELAND, 1928).
[4]) Seven pairs (BOEDIJN, 1924*b*); circle of 12 + 1 pair (CLELAND, 1925, 1928, (1926) 1929; HÅKANSSON, 1926).

OENOTHERACEAE (continued)	n	2n	
Oenothera (continued)			
Oenothera Lamarckiana Mutants			
aberrans (*O. lata* × *O. Lamarckiana*)		14 + fragment	LUTZ, 1916.
albida		15	LUTZ, 1908, 1917*a*; DE VRIES & BOEDIJN, 1923, 1924*a*; BOEDIJN, 1924*b*, 1925*b*; DE VRIES & GATES, 1928.
albida gigantea		24	VAN OVEREEM, 1922.
angustifolia	14		DULFER, 1924.
aurata	$\frac{14}{2}$ [1]		CLELAND, 1928.
auricula		15	DE VRIES & BOEDIJN, 1923, 1924*a*; BOEDIJN, 1924*b*, 1925*b*.
aurita		15	DE VRIES & BOEDIJN, 1923, 1924*b*; BOEDIJN, 1925*b*.
bienniformis		14	VAN OVEREEM, 1922; BOEDIJN, 1925*b*.
bipartita		15	LUTZ, 1917*a*.
blanda gigantea		25	VAN OVEREEM, 1921, 1922.
blandina		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES & BOEDIJN 1923; DE VRIES & GATES, 1928;
	$\frac{14}{2}$ [2]		CLELAND, 1928, (1926), 1929.
blandina gigantea		24	VAN OVEREEM, 1921, 1922.
brevistylis		14	GATES & THOMAS, 1914; BOEDIJN, 1925*b*; DE VRIES & GATES, 1928.
cana		15	VAN OVEREEM, 1921, 1922; DE VRIES & BOEDIJN, 1923, 1924*a*, *b*; BOEDIJN, 1924*b*, 1925*a*, *b*; DULFER, 1926; DE VRIES & GATES, 1928.
candicans		15	DE VRIES & BOEDIJN, 1923, 1924*a*; BOEDIJN, 1924*b*, 1925*b*.
compacta		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES & BOEDIJN, 1923.

[1]) Circles of 4 or 5, or one circle of 12 + 1 pair, or 1 circle of 10 + 2 pairs (CLELAND, 1928).
[2]) Seven pairs (CLELAND, 1925, 1928, (1926) 1929).

OENOTHERACEAE (continued)	n	2n	
Oenothera Lamarckiana Mutants (Continued)			
curta	$\frac{15}{2}$		HÅKANSSON, 1926*b*.
decipiens		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES & BOEDIJN, 1923; DE VRIES & GATES, 1928.
delata		15	DE VRIES & BOEDIJN, 1923, BOEDIJN, 1924*b*, 1925*b*.
delicatula		14	LUTZ, 1916.
dentata	$\frac{15}{2}$ [1])		HÅKANSSON, 1926*b*.
dependens	$\frac{15}{2}$ [2])		HÅKANSSON, 1926*b*.
deserens		14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*; 1925*b*; DE VRIES & GATES, 1928.
	7 [3])		CLELAND, 1928, (1926) 1929.
diluta		15	BOEDIJN, 1924*b*, 1925*b*.
distans		15	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*, 1925*b*.
elongata		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES & BOEDIJN, 1923.
erythrina		15	VAN OVEREEM, 1921.
		14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*, 1925*b*; DE VRIES & GATES, 1928.
	$\frac{14}{2}$ [4])		CLELAND 1928, (1926), 1929.
excelsa	$\frac{21}{2}$ [5])		HÅKANSSON, 1926*b*.
exilis		15	LUTZ, 1917*a*.
exundans		15	LUTZ, 1917*a*.
favilla		14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*.
flava		15	DE VRIES & BOEDIJN, 19233; BOEDIJN, 1924*b*, 1925*b*.
flavescens	$\frac{14}{2}$ [6])		HÅKANSSON, 1926*b*.

[1]) One pair & 1 or more chains (HÅKANSSON, 1926*b*).
[2]) One pair & circle of 13 (HÅKANSSON, 1926).
[3]) Seven pairs (CLELAND, 1925, 1928, (1926) 1929).
[4]) Circle of 6 & 4 pairs (CLELAND, 1928, (1926) 1929).
[5]) A trivalent group was often seen in diakinesis (HÅKANSSON, 1926*b*).
[6]) Circle of 12 & 1 pair (HÅKANSSON, 1926*b*).

OENOTHERACEAE (continued)	n	2n	
Oenothera Lamarckiana Mutants (Continued)			
flavicura :	14[1]) / 2		RENNER, 1928.
fragilis		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES & BOEDIJN, 1923.
gigantea (diploid)		14	HÅKANSSON, 1924*b*.
	14[2]) / 2		„ 1926*b*.
„ (tetraploid)		28	„ 1924*b*.
	14		„ 1926*b*.
gigas		28[3])	LUTZ, 1907, 1908; GATES, 1908*a*, *b*, 1909*c*, 1911, 1913*a*, *b*, 1915*a*, 1917*b*; GATES & THOMAS, 1914; DAVIS, 1911; DE VRIES, 1918*a*; STOMPS, 1912*a*, 1916; VAN OVEREEM, 1921, 1922; BOEDIJN, 1924*b*, 1925*b*.
gigas lata		29	VAN OVEREEM, 1922; BOEDIJN, 1924*c*.
hamata		15	DE VRIES & BOEDIJN, 1924*a*; BOEDIJN, 1924*b*, 1925*b*.
incurvata		15	GATES, 1915*a*.
lactuca		15	VAN OVEREEM, 1921, 1922; DE VRIES, & BOEDIJN, 1923, 1924*b*, 1925*b*.
laevifolia		14	GATES, 1909*a*.
lancifolia		14	DULFER, 1926.
lata		14, 15, 16	LUTZ, 1908.
		15	GATES, 1907*a*. 1909*b*, 1912; LUTZ, 1912; GATES & THOMAS, 1914; VAN OVEREEM, 1922; DE VRIES & BOEDIJN, 1923, 1924*a*; BOEDIJN, 1924*b* 1925*b*; DE VRIES & GATES. 1928.
	7–8	15	OELKERS, 1927.
lata rubricalyx		15	GATES & THOMAS, 1914.
latescens		16	GATES, 1915*a*, *b*.
latifrons		14[4])	CLELAND, 1928, (1926), 1929.

[1]) Circle of 12 & 1 pair (RENNER, 1928).
[2]) Circle of 12 & 1 pair (HÅKANSSON, 1926*b*).
[3]) Lutz, (1908) sometimes found 29 chromosomes.
[4]) Lacks circles [CLELAND (1926) 1929].

OENOTHERACEAE (continued)	n	2n	
Oenothera Lamarckiana Mutants (continued)			
linearis		14	DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*.
liquida		15	VAN OVEREEM, 1921, 1922; DE VRIES & BOEDIJN, 1923, 1924*a*, *b*; BOEDIJN, 1924*b*, 1925*b*; DULFER, 1926.
militaris		14	DULFER, 1926.
nanella		14	GATES, 1908*a*; LUTZ, 1908; DE VRIES & BOEDIJN 1923; BOEDIJN, 1925*b*; DE VRIES & GATES, 1928.
nanella lata		15	LUTZ, 1917*a*.
nitens		15	DE VRIES & BOEDIJN, 1923, 1924*a*; BOEDIJN, 1924*b*, 1925*b*.
obionga		14	LUTZ, 1908.
oblonga		14 or 15	LUTZ, 1917*a*.
		15 [1])	DE VRIES, 1918*a*; VAN OVEREEM, 1922; DE VRIES & BOEDIJN, 1923, 1924*a*, BOEDIJN, 1924*b*, 1925*a*, *b*; CLELAND, 1923, 1925, 1928, (1926) 1929; DE VRIES & GATES, 1928.
obscura	$\frac{15}{2}$ [2])		HÅKANSSON, 1926*b*.
pallescens		15	VAN OVEREEM, 1921, 1922; DE VRIES & BOEDIJN, 1923, 1924*a*, *b*; BOEDIJN, 1924*b*, 1925*a*, *b*; DE VRIES & GATES, 1928.
pallida		14	BOEDIJN, 1924*b*, 1925*b*; DE VRIES & GATES, 1928.
perennis		21	BOEDIJN, 1925*b*.
persicaria		15	DE VRIES & GATES, 1928.
pervirens		14 [3])	(ILLICK) given by SHULL, 1928.
planifolia	7 [4])		HÅKANSSON, 1926*b*.
plicatula		14	LUTZ, 1916.

[1]) Circles of 3 or chains of 4, 7, & 9 and the others paires (CLELAND, 1928); variation in the number paired and unpaired (CLELAND (1926) 1929).
[2]) Often circle of 12 & 1 pair (HÅKANSSON 1926*b*).
[3]) Circle of 12 + 1 pair, or 7 pairs (ILLICK, given by SHULL, 1928).
[4]) Circle of 11 + 1 pair (HAKANSSON, 1926*b*).

OENOTHERACEAE (continued)	n	2n	
Oenothera Lamarckiana Mutants (continued)			
problandina		14	DE VRIES & BOEDIJN, 1923; 1923; BOEDIJN, 1924*b*; DE VRIES & GATES, 1928.
„*pseudo gigas*"		14	STOMPS, 1916
pulla		15	DE VRIES & BOEDIJN, 1924*a*; BOEDIJN, 1924*b*, 1925*a*, *b*; DULFER, 1926; DE VRIES & GATES, 1928.
quadrata		21	DE VRIES & GATES, 1928.
recurrens		14	BOEDIJN, 1924*b*, 1925*b*.
rubricalyx		14 [1]	GATES & THOMAS, 1914; GATES 1915*a*; DE VRIES & BOEDIJN, 1923; CLELAND, 1925, 1928, (1926) 1929; BOEDIJN, 1925*b*; DE VRIES & GATES; 1928, SHEFFIELD, 1927.
rubricalyx rubicunda . . .		14	BOEDIJN, 1925*b*.
rubricalyx tenella		15	BOEDIJN, 1925*b*.
rubrinervis		14	GATES, 1908*a*, *c*; DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*, 1925*b*; DULFER, 1926; DE VRIES & GATES, 1928.
		14 + fragment	LUTZ, 1916*a*.
	$\frac{14}{2}$ [2]		CLELAND, 1925, 1928, (1926) 1929.
rubrisepala	$\frac{14}{2}$ [3]		HÅKANSSON, 1926*b*.
scindens		14	DE VRIES & BOEDIJN, 1923.
scintillans		15	HANCE, 1918; VAN OVEREEM,
		15	1922; DE VRIES & BOEDIJN, 1923, 1924*a*; BOEDIJN, 1924*b*, 1925*b*; DE VRIES & GATES, 1928.
secunda		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES & BOEDIJN, 1923.
secunda lata		15	„ „
semigigas		21	GEERTS, 1911; STOMPS, 1912*a*; LUTZ, 1912; GATES, 1915*a*; VAN OVEREEM, 1922; DE

[1]) Circle of 8 + 3 pairs (CLELAND, 1925, 1928 (1926) 1929), circle of 6 + 4 pairs (SHEFFIELD, 1927).

[2]) Circle of 6 + 4 pairs (CLELAND, 1925, 1928, (1926) 1929).

[3]) Circle of 6 + 4 pairs (HÅKANSSON, 1926*b*).

OENOTHERACEAE (continued)	n	2n	
Oenothera Lamarckiana Mutants (Continued)			
			VRIES & BOEDIJN, 1924*a*, *b*; BOEDIJN, 1925*b*; DE VRIES & GATES, 1928.
semi-gigas cana		15	DE VRIES, 1955*b*.
semi-gigas hamata		15	" " "
semi-gigas liquida		15	" " "
semi-gigas pulla		15	" " "
semi-gigas scintillans . . .		15	" " "
semi-gigas spathulata . . .		15	" " "
semilata		15	GATES, 1913*b*, GATES & THOMAS, 1914; DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*, 1925*b*.
spathulata		15	DE VRIES & BOEDIJN, 1923, 1924*a*; BOEDIJN, 1924*b*, 1925*a*, *b*; DE VRIES & GATES, 1928; DULFER, 1926.
stricta		15	HÅKANSSON, 1926*b*.
sublinearis		15	DE VRIES & BOEDIJN, 1923, BOEDIJN, 1924*b*.
subovata		15	LUTZ, 1917*a*; DE VRIES & BOEDIJN, 1923; BOEDIJN, 1924*b*.
tarda		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES & BOEDIJN, 1923; DE VRIES & GATES, 1928.
tardescens		15	BOEDIJN, 1924*b*.
tripartita		15 3 fragments	DULFER, 1926.
vixifolia		15	VAN OVEREEM, 1921.
de Vriesii		15	VAN OVEREEM, 1921, 1922.
mutant *sulfurea*	$\overline{14}$ [1] / 2		CLELAND, (1926) 1929.
mutant 1926.41.2	6–9	15	MICHAELIS, 1928.
mutant 1926.101.*a*	7–8		" "
Oenothera Lamarckiana simplex		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES, 1923*a*; DE VRIES & BOEDIJN, 1923.
" *Lamarckiana simplex albida*		15	DE VRIES, 1923.
" *Lamarckiana simplex compacta*		14	DE VRIES, 1923; BOEDIJN, 1925*b*.

[1]) Circle of 4 (CLELAND (1926) 1929).

OENOTHERACEAE (continued)	n	2n	
Oenothera (continued)			
Oenothera Lamarckiana simplex deserens		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES, 1923; DE VRIES & BOEDIJN, 1923.
„ *Lamarckiana simplex elongata*		14	DE VRIES, 1923; BOEDIJN, 1925*b*.
„ *Lamarckiana simplex favilla* , ...		14	DE VRIES, 1923.
„ *Lamarckiana simplex fragilis*		14	„ „ „
„ *Lamarckiana simplex linearis*		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES, 1923; DE VRIES & BOEDIJN, 1923.
„ *Lamarckiana simplex lata*		15	BOEDIJN, 1920, 1925*b*; VAN OVEREEM, 1922; DE VRIES, 1923.
„ *Lamarckiana simplex nanella*		14	BOEDIJN, 1920, 1924*b*, 1925*b*; DE VRIES, 1923; DE VRIES & BOEDIJN, 1923.
„ *Lamarckiana simplex nanella duplex* = (*O. simplex* mut. *gigas*).		28	BOEDIJN, 1920, 1925*b*; DE VRIES, 1923.
„ *Lamarckiana simplex secunda lata*		15	DE VRIES, 1923.
„ *Lamarckiana simplex semigigas*		21	BOEDIJN, 1920, 1925*b*; DE VRIES, 1923.
„ *longiflora*	7		BEER, 1906; BOEDIJN, 1925.
„ *Millersi*	7	14	STOMPS, 1912*a*.
„ *mollissima*	7		SCHWEMMLE, 1927.
„ *muricata* L.		14	STOMPS, 1912*a*; RENNER, 1914; BOEDIJN, 1924*a*, 1925*b*.
	$\overline{2}$ 14 [1])		CLELAND, 1923, 1925, 1926*b*, 1928, (1926), 1929.
„ *novae scotiae*	$\overline{2}$ 14 [2])		SHEFFIELD, 1927.

[1]) Circle of 14 (CLELAND, 1925, 1928, (1926) 1929).
[2]) Circle of 14 (SHEFFIELD, 1927).

OENOTHERACEAE (continued)	n	2n	
Oenothera (continued).			
Oenothera nutans	7	14	ISHIKAWA 1918.
„ *odorata*	7		SCHWEMMLE, 1927.
„ *pratincola*		14	BARTLETT, 1925*b*.
„ *pratincola* var. *gigas*.		28	(ARZBERGER) given by BARTLETT, 1915*b*.
„ *pratincola* mut. *nummularia*		14	BARTLETT, 1916.
„ *pumila*	14		VALCANOVER, 1926.
„ *pycnocarpa*	7	14	ISHIKAWA, 1918.
„ *rosea*	$\frac{14}{2}$ 1)		SCHWEMMLE, 1924*b*.
„ *sinuata* L.	7	14	SINOTO, 1927.
„ *strigosa*	$\frac{14}{2}$ 2)		OELKERS, 1926.
„ *suaveolens* DESF. . .	$\frac{14}{2}$ 3)		DE VRIES, 1918*a*, *b*, OELKERS, 1923, 1926, CLELAND, 1928.
		14	BOEDIJN, 1924*a*, 1925*b*.
„ *suaveolens lata* . . .		15	DE VRIES, 1918*b*; VAN OVEREEM, 1922.
„ *suaveolens jaculatrix*.		15	DE VRIES, 1918*b*.
„ „heterozygous form"	$\frac{14}{2}$ 4)		CLELAND, (1926) 1929.
„ (diverse forms) . . .		14	GREGOIRE, 1912.
Oenothera Hybrids:			
Oenothera aurata × *latifrons* .	$\frac{14}{2}$ 5)		CLELAND, 1928.
„ *Berteriana* × *Odorata*	$\frac{14}{2}$ 6)		SCHWEMMLE, 1928.
„ *Berteriana* × *O. odorata* F_2.	14(?)		„ „
„ *biennis* × *O. Hookeri*	$\frac{14}{2}$ 7)	14 8)	CLELAND, 1928.

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1) Chain of 14 (SCHWEMMLE, 1924*b*).
2) Circle of 12 or 14 (OELKERS, 1926).
3) Circle of 12 or 14 (OELKERS, 1926); circle of 12 + 1 pair (CLELAND, 1928).
4) Circle of 10 or 12 (CLELAND, (1926) 1929).
5) Circle of 4 + 5 pairs or circle of 6 + 4 pairs (CLELAND, 1928).
6) In the F_2 generation of this cross plants appeared having branches that were tetraploid and by close pollination of flowers on these, seeds were obtained that gave rise to two gigas forms. (SCHWEMMLE, 1928), considers that these two gigas.
7) plants have the tetraploid chromosome number.
8) Circle of 10 + 2 pairs in „*rubefacta*" plants and circle of 14 in „albata" plants (CLELAND, 1928).

OENOTHERACEAE (continued)	n	2n	
Oenothera Hybrids (Continued):			
Oenothera biennis × *O. Lamarckiana*		14	RENNER, 1914.
„ *biennis* × *O. muricata*	$\frac{14}{2}$ [1]		RENNER, 1914; CLELAND, 1928
„ *biennis* × *O. suaveolens*	$\frac{14}{2}$ [2]		CLELAND, 1928.
„ *biennis semigigas* × × *O. Lamarckiana*.		95	VAN OVEREEM, 1921.
„ *biennis semigigas* × *O. Lamarckiana gigas*		23	„ „ „
		36	„ „ „
„ *franciscana* × *O. grandiflora* . . .	$\frac{14}{2}$ [3]		CLELAND, 1928.
„ *franciscana sulfurea* × *latifrons*	$\frac{14}{2}$ [4]	14	CLELAND, 1928.
„ *grandiflora* × *franciscana*	$\frac{14}{2}$ [3]		„ „
„ *grandiflora* × mut. *sulfurea*	$\frac{14}{2}$ [5]		„ „ (1926) 1929
„ *grandiflora* var. *lorea* × *O. Lamarckiana*.		24	DE VRIES, 1918*a*.
„ *Hookeri* × *O. suaveolens*		14 [3]	CLELAND, 1928.
„ *Lamarckiana* × *O. biennis*		14	RENNER, 1914.
„ *Lamarckiana* × *O. biennis* (= *O. fallax*)	$\frac{14}{2}$ [6]		HÅKANSSON, 1926*b*.

[1]) Circle of 4 + circle of 6 + 2 pairs (CLELAND, 1928).
[2]) Circle of 12 + 1 pair (CLELAND, 1928).
[3]) Circle of 4 + 5 pairs (CLELAND, 1928).
[4]) Circle of 6 + 4 pairs (CLELAND, 1928).
[5]) Circle of 6 + 4 pairs or no circle (CLELAND, 1928, (1926) 1929).
[6]) As in *O. Lamarckiana*, circle of 12 + 1 pair (HÅKANSSON, 1926*b*). In one loculus of an anthere was found a small group of pollen-mother-cells which were tetraploid.

OENOTHERACEAE (continued	n	2n	
Oenothera (continued)			
Oenothera Lamarckiana × *O atrovirens semigigas*		24–28	STOMPS, 1916
„ *Lamarckiana* × *O. cruciata*		21	GATES, 1915*b*,
„ *Lamarckiana* × *O. Millersi*		21	„ „
„ *Lamarckiana* × *O. muricata*		21	„ „
„ *Lamarckiana* × *O. syrticola semigigas* .		24	STOMPS, 1916*b*.
„ *Lamarckiana gigas* × *O. atrovirens* SHULL & BARTLETT (*O. cruciata* NUTT)		21, 28 [1]	STOMPS, 1916.
„ *Lamarckiana gigas* × *O. Lamarckiana* . .	$7+7_1$		GEERTS, 1911.
„ *Lamarckiana gigas* × *O. Lamarckiana* F_2.		14	„ „
„ (*lata* × *Lamarckiana semi-gigas*		21	BOEDIJN, 1925*b*.
„ (*lata* × *gigas*) . . .	10, 11	21	„ „
„ (*Lamarckiana* × *O. grandiflora gigas*) *gigas*		28	„ 1924*c*, 1925*b*.
„ (*Lamarckiana lata* × *Lamarckiana*) *semigigas* mutant *deuterogigas*		28	„ „
„ (*lorea* × *O. Lamarckiana*).		28	„ „ 1925*b*.
„ (*simplex* × *O. Biennis Chicago*) *gigas* .		28	„ „ „
„ mut. *sulfurea* × *O. grandiflora*	$\frac{14}{2}$ [2]		CLELAND, 1928.
„ (*suaveolens* × *O. strigosa*) *flava*	7 [3]		OELKERS, 1926.
„ (*suaveolens* × *O. strigosa*) *albata* . .	$\frac{14}{2}$ [4]		„ „

[1]) One plant showed 28 chromosomes.
[2]) Circle of 6 + 4 pairs or no circle (CLELAND, 1928, (1926) 1929).
[3]) In both F_1 and F_2 plants the chromosomes appeared paired in diakinesis.
[4]) In both F_1 and F_2 plants the chromosomes appeared as one pair and two chains of the others.

OENOTHERACEAE (continued)	n	2n	
Oenothera (continued)			
Oenothera Lamarckiana biennis × *O. suaveolens* . .	$\frac{14}{2}$ [1])		CLELAND, 1928.
„ *Berteriana* × *onagra muricata*	7		SCHWEMMLE, 1927.
Progeny of *Oenothera Lamarckiana semigigas* × *O.* (*biennis* × *Lamarckiana*) *velutina*:			
Oenothera Lamarckiana. . . .		14	BOEDIJN, 1925*b*.
„ *Lamarckiana auricula*		15, 17	„ „
„ *Lamarckiana cana* .		15, 16, 17, 19, 20	„ „
„ *Lamarckiana candicans*		16	„ „
„ *Lamarckiana dorycarpa*		15	„ „
carpa		15	„ „
„ *Lamarckiana euryphylla*		20	„ „
„ *Lamarckiana hamata*		15	„ „
„ *Lamarckiana lata* . .	15, 17		„ „
„ *Lamarckiana liquida*		15, 16	„ „
„ *Lamarckiana oblonga*		15	„ „
„ *Lamarckiana pallescens* .×		15, 16,17, 19, 20	„ „
„ *Lamarckiana pulla* .		15, 16, 17	
„ *Lamarckiana scintillans*		15, 16, 17, 18, 19	„ „
„ *Lamarckiana spathulata*		15, 16, 17, 18	„ „
Progeny of *Oenothera Lamarckiana semigigas* × *O. decipiens*.			
Oenothera Lamarckiana. . . .		14	BOEDIJN, 1925*b*.
„ *Lamarckiana auricula*		15	„ „
„ *Lamarckiana cana* .		15, 16, 17, 18, 19	„ „
„ *Lamarckiana Ligula*.		15, 19, 20, 21	„ „
„ *Lamarckiana liquida*		15, 16, 20	„ „

[1]) Circle of 12 + 1 pair (CLELAND, 1928).

OENOTHERACEAE (continued)	n	2n	
Progeny of *Oenothera Lamarckiana semigigas* × *O. decipiens* (continued)			
Oenothera Lamarckiana oblonga		15	BOEDIJN, 1925*b*
„ *Lamarckiana pallescens*		15, 16	„ „
„ *Lamarckiana pulla* .		15, 19	„ „
„ *Lamarckiana scintillans*		15, 18, 19	„ „
„ *Lamarckiana spathulata*		15, 16, 17, 18, 19	„ „
Progeny of *Oenothera Lamarckiana* × (*O. biennis* × *Lamarckiana*) *velutina cana* (2n = 16):			
cana		15	BOEDIJN, 1925*b*.
cana nanella		15	„ „
Lamarckiana		14	„ „
liquida		15	„ „
liquida nanella		15	„ „
oblonga		15	„ „
pulla		15	„ „
spathulata		15	„ „
Progeny of *Oenothera* L. *semigigas* × (*O. biennis* × *Lamarckiana*) *velutina pulla* (2n = 17):			
cana		15	BOEDIJN, 1925*b*.
Lamarckiana		14	„ „
liquida		15	„ „
oblonga		15	„ „
pallescens.		15	„ „
pulla			
Progeny of *Oenothera* L. *semigigas* (*O. biennis* × *Lamarckiana*) *velutina euryphylla* (2n = 20):			
Plants with 17, 19, 23, 24, 26, 27 chromosomes . . .			BOEDIJN, 1925*b*.
Progeny of *Oenothera L. semigigas* × (*biennis* × *Lamarckiana*) *velutina pallescens* (2n = 20):			
Blandina		15	BOEDIJN, 1925*b*.
Blandina (abnormal)		15	„ „
Pallescens		15	„ „

OENOTHERACEAE (continued)		
Progeny of *Oenothera L. semigigas* × (biennis × Lamarckiana) velutina alata (2n = 26):		
Plants with 26, 27, 28 chromosomes.		BOEDIJN, 1925*b*.
Progeny of *Oenothera Lamarckiana semigigas* × *O.* (*muricata* × *Lamarckiana*) *velutina*:		
Central Group:		
Oenothera Euryphylla	20	DULFER, 1926.
" *glabra*	16	" "
" *Lamarckiana*. . . .	14	" "
" *pulla*	15	" "
" „Nebenformen" . .	16	" "
Lata Group:		
Latifolia	16	DULFER, 1926.
Synedra	16	" "
(„weitere Nebenformen") . . .	16, 17	" "
Scintillans Group:		
Oenothera acuminata	17, 18	DULFER, 1926.
" *hastata*	16, 17	"
" *lamprophylla* . . .	17	" "
" *lancifolia*	17	, "
" *linearis*	15, 16, 18, 20	" "
" *militaris*.	16, 17	" 1926
" („weitere Nebenformen")	17, 19	" "
Cana Group:		
Oenothera angustifolia	17, 18	DULFER, 1926.
" *cana*	15	" "
" *cana* B	16	" "
" *depilis*	16	" "
" *opaca*	15	" "
" („weitere Nebenformen")	1[illegible], 17	" "
Liquida Group:		
Oenothera cucumis	15	" "
" *lingua*.	16	" "
" *plana*	15	" "
Oenothera („weitere Nebenformen")	16	DULFER, 1926.
Spatulata Group:		
Oenothera chlorina	17	" .

OENOTHERACEAE (continued)	n	2n	
Progeny of *Oenothera Lamarckiana semigigas* × *O.* (*muricata* × × *Lamarckiana*) *velutina* (continued):			
Oenothera cochleata		16	DULFER, 1926
„ *dentata*		16	„ „
„ *hamata*		15	„ „
„ *orbicularis*		16, 17, 18	„ „
„ *rotunda*		16, 17, 18	„ „
„ *spathulata*		15, 16	„ „
„ *spathulata* B		16, 17	„ „
„ *spathulata* Y		17, 18, 19	„ „
„ *spathulata* 8		17, 16	„ „
„ („weitere Nebenformen)		17, 18	„ „
Pallescens Group:			
Oenothera pallescens		15	„ „
„ („Nebenform") . . .		18	DULFER, 1926.
Individuals which did not bloom (from same series):			
Oenothera glabra		16	DULFER, 1926.
„ *latifolia*		16	„ „
„ „(andere Nebenformen)"		17	„ „
„ *acuminata*		17, 18	„ „
„ *Hastataz*		17	„ „
„ *lamprophylla* . . .		17	„ „
„ *lancifolia*		17	„ „
„ *linearis*		15, 18, 20	„ „
„ („andere Nebenformen")		19	„ „
„ *depilis*		16	„ „
„ *orbicularis*		17, 18	„ „
„ *rotunda*		16, 17, 18	„ „
Eucharidium concinnum . . .	7 [1])		SCHWEMMLE, 1926.
Godetia amoena	7		HÅKANSSON, 1925; CHITTENDEN, 1928.
„ *Bottae*	9		HÅKANSSON, 1925; CHITTENDEN, 1928
(*Godetia lepida*	21		HÅKANSSON, 1925.
	26		CHITTENDEN, 1928.
„ *tenella*	16		„

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[1]) In diakinesis the chromosomes appear in ring pairs.

OENOTHERACEAE (continued)	n	2n	
Godetia (continued)			
Godetia Whitneyi	7		WINGE, 1925; HÅKANSSON, 1925; CHITTENDEN, 1928.
„ *amoena* × *G. Whitneyi* F_1.		14	HÅKANSSON, 1925.
		14–16	CHITTENDEN, 1928.
„ *amoena* × *G. Whitneyi* F_2.		14–17	„ „
„ *Bottae* × *G. tenella*) × *G. tenella*) × *G. tenella*		30	„ „
„ *Bottae* × *G. tenella*) × *G. Bottae*		24–28	„ „
HALORRHAGACEAE			
Gunnera chilensis	ca. 12		MODILEWSKI, 1908; WINGE. 1917.
„ *macrophylla* BL. . . .	ca. 12		SAMUELS, 1912.
HIPPURIDACEAE			
Hippuris vulgaris	ca. 16		JUEL, 1911.
	16		WINGE, 1927.
CYNOMORIACEAE			
Cynomorium coccineum . . .	12		JUEL, 1903*b*.
UMBELLIFLORAE			
ARALIACEAE			
Hedera helix conglomerata . .	43–47		OEHM, 1924 [1])
„ *helix typica*	44–49		„ „
„ *helix hibernica*	89–98		„ „
UMBELLIFERAE			
Anthriscus silvestris (L.) HOFFM.	7–8		PETERSEN, 1914.
„ *silvester*.	8		WINGE, 1917.
Aegopodium podograria . . .	ca. 20		„ „
Pastinaca sativa L.	probably 8		BEGHTEL, 1925.
CORNACEAE			
Cornus candidissima	8–9		WINGE, 1917.
„ *glabrata*	11–12		„ „
Aucuba japonica.	47		(SAKAMURA, 1916) given by ISHIKAWA, 1916.
	18 [2])	36 [3])	PALM & RUTGERS, 1917.
Aucuba japonica THUNB. . . .	16		SUGIURA, 1927.

[1]) In previous list GAISER (1926) this was erroneously given 1923.
[2]) Seventeen chromosomes were found in one case.
[3]) In one division figure in the endosperm 48 chromosomes could be clearly counted.

	n	2n	
DIAPENSIALES			
DIAPENSIACEAE			
Diapensia lapponica	6 [1])		SAMUELSON, 1913.
„ *lapponica* L. . . .	6		HAGERUP, 1918.
ERICALES			
CLETHRACEAE .			
Clethra alnifolia L.	16		HAGERUP, 1928.
„ *arborea* AIT.	8		„ „
PYROLACEAE			
Pyrola chlorantha	16		SAMUELSON, 1913.
„ *grandiflora* (RADDI) . .	23		HAGERUP, 1928.
„ *media*	probably 16+		SAMUELSON, 1913.
„ *minor* L..	23		HAGERUP, 1928.
„ *rotundifolia*	16		SAMUELSON, 1913.
„ *rotundifolia* L.	23		HAGERUP, 1928.
„ *uniflora*	16		SAMUELSON, 1913.
ERICACEAE			
Ledum groenlandicum OED. . .	13		HAGERUP, 1928
Rhododendron lapponicum WAHLBG.	13		„ „
Leiophyllum buxifolium ELL. .	12		„ „
Loiseleuria procumbens (L.) DESVAUX.	12		„ „
Kalmia glauca AIT.	24		„ „
„ *latifolia* L.	12		„ „
Phyllodoce coerulea (L.) GREN & GODR.	6		„ „
Cassiope hypnoides L.	24(?)		„ „
Andromeda polifolia L	24		„ „
Gaultheria shallon PURSH. . .	48		„ „
Arbutus andrachne L.	13		„ „
„ *canariensis* DUHAM . .	13		„ „
Arctostaphylos diversifolia PARRY	13		„ „
Arctostaphylos uva-ursi (L.) SPR..	26		„ „
Gaylussacia baccata	12		LONGLEY, 1927*c*.
Oxycoccus palustris PERS. . .	36		HAGERUP, 1928.
Vaccinium angustifolium [2]) . .	24		LONGLEY, 1927*c*.
„ *atrococcum*	12		„ „

[1]) The nuclei of the endosperm contained 18 chromosomes.
[2]) Plants from two different localities were studied.

ERICACEAE (continued)	n	2n	
Vaccinium (continued)			
Vaccinium canadense	12		LONGLEY, 1927*c*.
„ *canadense* (albino) .	12		„ „
„ *corymbosum* [1]) . .	24		„ „
„ *hirsutum*	24		„ „
„ *pallidum*	36		„ „
„ *vacillans*	12		„ „
„ *vacillans* (albino) .	12		„ „
„ *virgatum*	36		„ „
„ *vitis-idaea* L. . . .	12		HAGERUP, 1928.
„ *angustifolium* × *V. hirsutum*	24		LONGLEY, 1927*c*.
„ *angustifolium* × *V. myrsinites*	24		„ „
(„ *angustifolium* × *V. myrsinites*) × *V. corymbosum* . . .	24		„ „
„ *corymbosum* × *V. corymbosum* (anther form). . . .	24		„ „
„ *corymbosum* × *V. virgatum*.	30 [2])		„ „
Calluna vulgaris SALISB. var. *pubescens* KOCH.	8		HAGERUP, 1928.
Erica arborea L.	12		„ „
„ *carnea* L.	12		„ „
„ *cinera* L.	12		„ „
„ *hiemalis* hort. angl. . .	12		„
„ *tetralix* L.	12		„ „
Polycodium stamineum	12		LONGLEY, 1927*c*.
Bruckenthalia spiculiflora RCHB.	18		HAGERUP, 1928.
EPACRIDACEAE			
Epacris impressa	13		SAMUELSON, 1913.
PRIMULALES			
MYRSINACEAE			
Ardisia crispa	23		DAHLGREN, 1916.
Primula (diverse forms) . . .		18	GRÉGOIRE, 1912.
„ *acaulis*		22	CHITTENDEN, 1928.
„ *auricula*	27		MARCHAL, 1920; VOKOLEK, 1925.

[1]) Plants from three different localities were studied.

[2]) Reduction divisions were very irregular and only occasionally were the chromosomes paired.

PRIMULACEAE (continued)	n	2n	
Primula (continued)			
Primula auricula L.	30–36	72	ERNST & MOSER, 1925; MOSER, 1926.
,, *floribunda*	9		DIGBY, 1912; DAHLGREN, 1916
,, *hirsuta*	27	54	VOKOLEK, 1925.
,, *hirsuta* ALL.	30–36	72	ERNST & MOSER, 1925.
	33–36	72	MOSER, 1926.
,, *japonica*	22		IINUMA, 1926.
,, *Juliae*		22	CHITTENDEN, 1928.
,, *Kewensis* (*P. floribunda* × *verticillata*) (sterile)	9	18	DIGBY, 1912.
,, *Kewensis* (fertile) . .	18	36	DIGBY. 1912; DAHLGREN, 1916; PELLEW & DURHAM, 1915.
		36	HEITZ, 1926.
,, *Kewensis* (farinosa) .	18	36	DIGBY, 1912.
,, *malacoides*	9		SUGIURA, 1928*a*.
,, *modesta* var. *Faurieae*	9		IINUMA, 1926.
,, *nipponica*		22	,, ,,
,, *officinalis*	11		MARCHAL, 1920.
	11	22	DAHLGREN, 1916.
,, *Reinii*		24	IINUMA, 1916.
,, *Sieboldii*	12		,, ,,
		24	ONO, 1927*a*.
,, *Sieboldii* var. *Awobanofue*		24	IINUMA, 1926.
,, *Sieboldii* var. *Edasango*		24	,, ,,
,, *Sieboldii* var. *Hahanoi*		24	
,, *Sieboldii* var. *Hatsuhinode*		24	,, ,,
,, *Sieboldii* var. *Hiryu* .		24	,, ,,
,, *Sieboldii* var. *Kokiden*			
,, *Sieboldii* var. *Kurozomegawa*		24	,, ,,
,, *Sieboldii* var. *Makinowo*		24	,, ,,
,, *Sieboldii* var. *Mitanohikari*		24	,, ,,
,, *Sieboldii* var. *Nuresagi*		36	,, ,,
,, *Sieboldii* var. *Sasononami*		36	IINUMA, 1926.
	12_3 [1]		ONO, 1927*a*.

[1] In diakinesis of pollen-mother-cells 12 trivalents occurred.

PRIMULACEAE (continued)	n	2n	
Primula (continued)			
Primula Sieboldii var. *Shirowashi*		36	IINUMA, 1926
„ *Sieboldii* var. *Suibijin*		24	„ „
„ *Sieboldii* var. *Uchiu* .		24	„ „
„ *sinensis*	12	24	GRÉGORY, 1909; KEEBLE, 1912; DE WINTON, 1928.
	12 & 24		
		24	VOKOLEK, 1925.
„ *sinensis* (*gigas*) . . .	12	24	GRÉGORY, 1909; KEEBLE, 1912.
	24	48	GRÉGORY, 1914.
„ *verticillata*	9		DIGBY, 1912.
„ *acaulis* × *P. Juliae* .	11	22	CHITTENDEN, 1928
„ *auricula* × *P. hirsuta* (= P. *pubescens*) . .	27		VOKOLEK, 1925.
„ *auricula* × *P. hirsuta* ALL. (= *P. pubescens* JACQ.)	32–36		MOSER, 1926; ERNST & MOSER, 1928.
„ *elatior* × *P. Juliae* .	11	22	CHITTENDEN, 1928.
„ *floribunda isabellina* × *P. Kewensis* (sterile)	9	18	DIGBY, 1912.
„ *floribunda isabellina* × *P. Kewensis* (fertile)	9	18	„ „
„ *hirsuta* × *P. auricula*	36–36	72	ERNST & MOSER, 1925.
„ *officinalis* × *P. acaulis*		22	CHITTENDEN, 1928.
„ *polyanthus* Cloth of Gold × *P. Juliae* .	11		„ „
Androsace septentrionalis . . .	10		DAHLGREN, 1916.
Cyclamen africanum		32–36	HEITZ, 1926.
„ *cilicicum*		ca. 28–32	„ „
„ *corum*	14		„ „
„ *europaeum*		(28)–32	„ „
„ *graecum*		68–78	HEITZ, 1926
„ *persicum*		48	„ „
„ *persicum* cult. hort. (*gigas*)	42–44	ca. 88	„ „
„ *pseudograecum* . . .		28	„ „
Lysimachia thyrsiflora	ca. 20		DAHLGREN, 1916.

PLUMBAGINALES

PLUMBAGINACEAE

Plumbago capensis		14	DAHLGREN, 1916

EBENALES	n	2n	
EBENACEAE			
Diospyros Kaki [1]	(27)–28		YASUI, 1915.
Diospyros Kaki var. *E. Gosho* .	45		NAMIKAWA and HIGASHI, 1928.
var. *Kurokama*	45		„ „ „ „
var. *Nara-Gosho* . . .	45		„ „ „ „
var. *Shôgatsu* .	45		„ „ „ „
var. *Tenji* [2] .	45		„ „ „ „
Seedlings of *Anzai*		90	„ „ „ „
Seedlings of *Kubo* . . .	45	90	„ „ „ „
Seedlings of *Tenjin-Gosho*		90	„ „ „ „
„ *Lotus*	15	30	„ „ „ „
„ *virginiana* . . .	at least 30		HAGUE, 1911.
CONTORTAE			
OLEACEAE			
Syringa chinensis WILLD. . .	14–20		TISCHLER, 1908.
„ *chinensis* (= *rothomagensis*)	ca. 16		„ 1921–22.
„ *vulgaris*	22		„ 1928*b*.
GENTIANACEAE			
Cotylanthera tenuis	16–18	32–36 [3]	OEHLER, 1927.
Gentiana lutea	21		STOLT, 1921.
„ *procera*		ca. 80	DENNISTON, 1913.
Voyria coerulea	18–20		OEHLER, 1927.
Voyriella parviflora	10–14		„ „
Leiphaimos azurea	18		WINGE, 1925.
„ spec.	16–20		OEHLER, 1927.
APOCYNACEAE			
Vinca herbacea	23		FINN, 1928.
„ *minor*	23		„ 1928.
ASCLEPIADACEAE			
Asclepias Sullivantii ENGELM.	ca. 5		FRYE, 1902.
„ *tuberosa*	ca. 5		„ 1901.
„ *verticillata* L. . . .	ca. 8		„ 1902.

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[1] Five different varieties including „Tenryubo", „Jenjimaru", Tanenashi" and „Fuyu" were studied.

[2] Mr. SASAOKA of Imp. Hort. Exp. Sta., Okitsu, had counted about 45 pairs of gemini also.

[3] This diploid number was determined from divisions in the embryo-sac mother cell and later divisions in embryo-sac.

TUBIFLORAE	n	2n	
CONVOLVULACEAE			
Convolvulus elongatus		22	HEITZ, 1926.
„ *scammonia*		24(?)	„ „
„ *siculus*		44	HEITZ, 1926.
„ *tricolor*		20	„ „
„ *undulatus*		22–(24)	„ „
Ipomaea purga		(24)–28	„ „
Pharbitis Nil	12–14	24–28	(OGHA, 1916) given by ISHIKAWA, 1916.
„ *Nil*, CHOIS [1])	15		YASUI, 1928.
„ *Nil* CHOIS		30	NAGAO, 1928.
POLEMONIACEAE			
Cobaea scandens CAV. . . .	ca 12		LAWSON, 1898
Phlox Drummondii		14	KELLY, 1920.
Gilia millefoliata FISCH et MEY	16		SCHNARF, 1921.
HYDROPHYLLACEAE			
Hydrophyllum canadense . . .	9		(WINKLER, 1921) given by TISCHLER, 1921—22.
	12		SVENSSON, 1925.
Nemophila atomaria	9		CHITTTENDEN, 1928.
„ *aurita*	12		SVENSSON, 1925.
	9		CHITTENDEN, 1928.
„ *discoidalis*	9		SUGIURA, 1928*a*.
„ *insignis*	9		CHITTENDEN, 1928; SUGIURA, 1928.
„ *integrifolia*	9		CHITTENDEN, 1928.
„ *liniflora*	9		„ „
„ *maculata*	9		CHITTENDEN, 1928; SUGIURA, 1928.
Phacelia campanularia	11		CHITTENDEN, 1928.
„ *congesta*	9		SUGIURA, 1928*a*.
„ *Parryi*	11		CHITTENDEN, 1928.
„ *Parryi* (giant) . . .	11		„ „
„ *tanacetifolia* BENTH. .	9		TJEBBES, 1928.
„ *viscida*	11		CHITTENDEN, 1928.
„ *Whitlavia* (*alba*) . . .	11		„ „
„ *Whitlavia* (bicolor) .	11		„ „
BORRAGINACEAE			
Myosotis micrantha	18–20		WINGE, 1917.
„ *versicolor*	30		„ „

[1]) Diagnostic characters in 11 different strains were noted, and though differing, all had 15 haploid chromosomes.

VERBENACEAE	n	2n	
Verbena angustifolia MICHX. .	4		KANDA, 1920.
„ *hastata* L.	6		„ „
„ *officinalis*	6		SCHNARF, 1923.
„ *stricta* VENT.	6		KANDA, 1920.
Intermediate form of V. *hastata* & *V. stricta*	6		„ „
LABIATAE			
Lamium album	8		MARCHAL, 1920.
		18	HEITZ, 1926.
„ *album* L.	9		JÖRGENSEN, 1927*b*.
„ *amplexicaule*	9		„ 1923.
„ *amplexicaule* L. . . .	9		„ 1927*b*.
„ *dissectum*	18		„ 1923.
„ *dissectum* WITH. . .	18		„ 1927*b*.
„ *Galeobdolon* (L.) CRTZ.	18		„ „
„ *intermedium* FR. . .	18		„ „
„ *longiflorum* TEN. . .	9		„ „
„ *maculatum* L.	9		„ „
„ *orvala* L.	9		„ „
„ *purpureum*		18	HEITZ, 1926.
„ *purpureum* L. . . .	9		JÖRGENSEN, 1927*b*.
„ *rugosum* AIT.	9		„ „
„ *dissectum* × *amplexicaule*	$9+9_1$ $\overline{2}$		„ 1923.
„ *dissectum* WITH. × *amplexicaule* L. . .	$9+9_1$[1] $\overline{2}$		„ 1927*b*.
GALEOPSIS			
Subgenus Ladanum REICHB.			
Galeopsis angustifolia GAUDIN.	8		MÜNTZING, 1928.
„ *Ladanum* L.	8	16	„ „
„ *ochroleuca* LAMARCK	8	16	„ „
„ *pyrenaica* BARTHL. .		16	„ „
Subgenus Tetrahit REICHB.			
Galeopsis bifida BOENN. . . .	16	32	„ „
„ *pubescens* BESS. . .	8		„ „
„ *speciosa* MILL. . . .	8	16	„ „
„ *Tetrahit* L.	16	32	„ „
Thymus serpyllum		ca. 20	
		> 40 [2]	NĚMEC, 1925.

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[1]) Reduction division follows the Drosera scheme.
[2]) Didiploid tetradiploid cells were also found in cells of galls formed by *Eriophyes Thomasii*.

LABIATAE (continued)	n	2n	
Mentha piperita „*Eisenstaedtiana*"	18 [1])		SCHÜRHOFF, 1927.
„ *piperita*	18		HIMMELBAUR & HINDES, 1928.
„ *silvestris* L.	9		SCHÜRHOFF, 1927.
„ *spicata* var. *lampreilema* BRIQ. (= *M. vidis* L.)	18 [2])		„ „
„ *spicata* var. *lampreilema* BRIQ.	18		HIMMELBAUER & HINDES, 1928.
Coleus Rehneltianus		12–16	HABERLANDT, 1919.
SOLANACEAE			
Nicandra physaloides GAERTN.	10		DE VILMORIN & SIMONET, 1928.
Salprichoa rhomboidea NIERS. .	12		DE VILMORIN & SIMONET, 1927*a* 1928.
Atropa Belladonna	36		MARCHAL, 1920.
„ *Belladonna* L.	36		DE VILMORIN & SIMONET, 1927*a* 1928.
Scopolia lurida DUN.	24		DE VILMORIN & SIMONET, 1928,
Hyoscyamus albus	ca. 18	> 35	BONNET, 1911.
„ *alba* L.	17		DE VILMORIN & SIMONET, 1928.
„ *canadensis* HORT.	36		„ „ „ „ 1927*a*.
	34		„ „ „ „ 1928.
„ *niger*		32–36	HEITZ, 1926.
„ *niger* L.	18		SVENSSON, 1926.
	17		DE VILMORIN & SIMONET, 1928.
Physalis Alkekengi L.	12		„ „ „ „ 1927*a*. 1928.
„ *Francheti* MAST. . .	12		DE VILMORIN & SIMONET, 1928.
„ *peruviana* MILL. . .	24		„ „ „ „ 1927*a*.
„ *peruvivana* L. . . .	24		„ „ „ „ 1928.
„ *philadelphica* LAM. .	12		„ „ „ „ 1928.
„ *pubescens* L.	12		„ „ „ „ 1927*a*. 1928.
Capsicum annuum L. var. *Hort.*	12		DE VILMORIN & SIMONET, 1927*a*
„ *annuum* L.	12		„ „ „ „ 1928.
„ *annuum chilense* . .	6 [3])		KOSTOFF, D. 1926.
„ *annuum grossum* . .	6 [3])		„ „

[1]) Division was somewhat irregular, lagging chromosomes having been left in the cytoplasm.

[2]) Dr. HEITZ had informed the writer (SCHÜRHOFF, 1927) that n = 17—19. Dwarf pollen grains were also observed.

[3]) In all species studied, but especially so in *C. annuum cbilense* one pair of chromosomes (K_1 & K_2) was considerably larger than the others and were usually on the periphery of the equatorial plate.

SOLANACEAE (continued)	n	2n	
Capsicum (continued)			
Capsicum annuum microcarpum	6 [1]		KOSTOFF, D. 1926.
„ *annuum nigrum* . .	6 [1]		„ „
Solanum aethiopicum L. . . .	12		JÖRGENSEN, 1928; DE VILMORIN & SIMONET, 1928.
„ *alatum* MOENCH. . .	24		JÖRGENSEN, 1928.
„ *atropurpureum* SCHRANK	24		„ „
„ *auriculatum* AIT. . .	12		DE VILMORIN & SIMONET, 1928.
„ *Balbisii* DUN. . . .	12		JÖRGENSEN, 1928.
„ *Caldasii* HUMB. et BONYL.	12		DE VILMORIN & SIMONET, 1927*a* 1928.
„ *capsicastrum* LINK. .	12		JÖRGENSEN, 1928; DE VILMORIN & SIMONET, 1928.
„ *chacoense* BITTER . .	12		SMITH, H. B. 1927.
„ *cornutum* LAM. . . .	12		JÖRGENSEN, 1928.
„ *cornutum* HORT. . .	12		DE VILMORIN & SIMONET, 1928.
„ *crispum* BENT. . . .	12		JÖRGENSEN, 1928.
„ *demissum* LINDL. . .	36		SMITH, H. B. 1927; JÖRGENSEN 1928; DE VILMORIN & SIMONET, 1928.
„ *diphyllum* BANKS. . .	36		JÖRGENSEN, 1928.
„ *dulcamara* L.	36		JÖRGENSEN, 1928; DE VILMORIN & SIMONET, 1928.
„ *fastigiatum* WILLD. .	36		JÖRGENSEN, 1928.
„ *Fendleri* GRAY . . .	24		SMITH, H. B. 1927.
„ *Fontanesianum* DUN.	12		DE VILMORIN & SIMONET, 1927*a* 1928.
„ *Gilo* RADDI	12		JÖRGENSEN, 1928
„ *glaucum* DUN . . .	12		DE VILMORIN & SIMONET, 1927*a* 1928.
„ *globiferum* DUN. . .	12		JÖRGENSEN, 1928.
„ *gracile* OTTO	12		DE VILMORIN & SIMONET, 1927*a* JÖRGENSEN, 1928.
„ *gracile* LINK	12		DE VILMORIN & SIMONET, 1928.
„ *grossularia* BITTER .	12		JÖRGENSEN, 1928.
„ *guinense* LAM. . . .	36		JÖRGENSEN & CRANE, 1927; JÖRGENSEN, 1928.
„ *haematocarpum* HORT	12		JÖRGENSEN 1928.
„ *heterodoxum* DUN... .	12		JÖRGENSEN, 1928; DE VILMORIN & SIMONET, 1927*a*, 1928.

[1]) In all species studied, but especially so in *C. annuum chilense* one pair of chromosomes (K_1 & K_2) was considerably larger than the others and were usually on the periphery of the equatorial plate.

SOLANACEAE (continued)	n	2n	
Solanum (continued)			
Solanum humile BERNH. . . .	36		JÖRGENSEN, 1928.
„ *hystix* DUN.	12		„ „
„ *insulae-paschalis* RITTER	12		„ „
„ *insulae-paschalis* HORT.	12		DE VILMORIN & SIMONET, 1928.
„ *integrifolium* POIR. .	12		„ „ „ „ 1927*a*.
„ *integrifolium* POIR (= *S. texanum* DUN.) .	12		„ „ „ „ 1928.
„ *Jamesii* TORR. . . .	12		SMITH, H. B. 1927; DE VILMORIN & SIMONET, 1927*a*, 1928
„ *jasminoides* PAXT .	12		DE VILMORIN & SIMONET, 1927*a* 1928; JÖRGENSEN, 1928
„ *laciniatum* AIT . .	24		DE VILMORIN & SIMONET, 1927*a*
„ *laciniatum* AIT. (= *S. aviculare* FORST. f.) .	24		„ „ „ „ 1928.
„ *luteum* MILL. (= *S. tomentosum* LAM.) .	24		JÖRGENSEN & CRANE, 1927.
„ *lycopersicum*	12		WINKLER, 1910, 1916; EAST, 1915; LESLEY & MANN, 1925, LESLEY, M. M., 1926.
„ *lycopersicum* L. . . .	12		DE VILMORIN & SIMONET, 1927*a* 1928.
	12	24	JÖRGENSEN, 1928.
„ *lycopersicum* (*chimaera*)		24 & 48 [1]	LESLEY, M. M., 1925.
„ *lycopersicum* (triploid)		36	LESLEY & MANN, 1925.
	12_3 [2]	36	LESLEY, M. M. 1926.
„ *lycopersicum* (tetraploid) [3]	24 [4]	48	JÖRGENSEN, 1928.
„ *lycopersicum* L. varieties:			
Balch's Fillbasket	12		JÖRGENSEN & CRANE, 1927.
	12_3 [5]	36	JÖRGENSEN, 1928.
Danish Export		36	JÖRGENSEN, 1928.
		48	„ „

[1]) In previous list, GAISER (1926), this was incorrectly given as 12 & 24 in the diploid column.

[2]) At diakinesis 12 trisomes were usually found.

[3]) JÖRGENSEN (1928, p. 151) states that tetraploids had been found in the variety „Danish Export", the variety cross „Sutton's Best of All × Potato Leaf" and in the grafted stock „Satisfaction."

[4]) There was a tendency to form tetrasomes.

[5]) The arrangement as 12 trisomes was found only in a small proportion of cells. In the majority of the cells bivalents and univalents were found.

SOLANACEAE (continued)	n	2n	
Dwarf Champion		24	LESLEY, J. W., 1926.
		36	„ „ 1928.
Early Dwarf Red	12		JÖRGENSEN & CRANE, 1927.
Globe		36	LESLEY, J. W., 1926.
Large Yellow	12		JÖRGENSEN & CRANE, 1927.
Livingston's Dwarf Aristocrat		36	LESLEY, J. W., 1928.
Stone		36	„ „ „
Sutton's Best of All	12		JÖRGENSEN & CRANE, 1927.
Dwarf Aristocrat × *Globe* F_1		26 [1])	LESLEY, J. W., 1926.
Dwarf Aristocrat × *Globe* F_2	$11+1_3$	25	„ „ „
Livingston's Dwarf Aristocrat (diploid × triploid) F_1		24–27 [2])	„ „ 1928.
Solanum macrocarpon		72 [3])	STOMPS, 1925.
„ *macrophyllum* HORT.	12		DE VILMORIN & SIMONET, 1927*a* 1928.
„ *marginatum* LINNE f.	12		DD VILMORIN & SIMONET, 1927*a* 1928.
„ *melongena* [4])	12	24	KOJIMA, 1925.
„ *melongena* L.	12		DE VILMORIN & SIMONET, 1927*a* 1928.
„ *memphiticum* GMEL. .	36		JÖRGENSEN, 1928.
„ *miniatum* BERNH. . .	24		„ „
„ *miniatum* BENCH (= *S. alatum* MOENCH .	24		DE VILMORIN & SIMONET, 1928.
„ *muricatum* AIT. . . .	14–16	> 23	NANNETTI, 1912.
„ *muricatum* AIT. . . .	12		DE VILMORIN & SIMONET, 1927*a*
„ *nigrum* L.	36		WINKLER, 1910, 1921; JÖRGENSEN & CRANE, 1927; DE VILMORIN & SIMONET, 1927*a*, 1928.
	36	72	WINKLER, 1916; JÖRGENSEN, 1928.
		72	STOMPS, 1925.
„ *nigrum* L. (haploid) .	$3+\frac{30_1}{2}$, $11+\frac{14_1}{2}$, $12+\frac{12_1}{2}$	36	JÖRGENSEN, 1928.

[1]) Two double trisomic plants were found.
[2]) There were 9 simple trisomes (2n = 25) types, including an extra one of the 9 chromosomes of each type. There were also disomic (2n = 26) and trisomic (2n = 27) forms.
[3]) Some syndiploid nuclei showed 144 chromosomes.
[4]) For 6 of 21 varieties investigated the haploid number was determined.

SOLANACEAE (continued)	n	2n	
Solanum (continued)			
Solanum nigrum L. (triploid) .	50–65	ca. 108	JÖRGENSEN, 1928.
„ *nigrum* L. (tetraploid)	72	140–150	„ „
„ *nigrum* var. gigas . .	72	144	WINKLER, 1916, 1921.
„ *nigrum* var. *gracile* RADDI	36		JÖRGENSEN & CRANE, 1927; DE VILMORIN & SIMONET, 1928.
„ *nigrum* var. *humile* BENCH		36	„ „ „
„ *ovigerum* DUN. . . .	12		DE VILMORIN & SIMONET, 1927*a* 1928.
„ *Pseudocapsicum* L. .	12		DE VILMORIN & SIMONET, 1928.
„ *Pseudo-maglia* HORT.	12		DE VILMORIN & SIMONET, 1927 1928
„ *pyracanthum* JACQ. .	12		DE VILMORIN & SIMONET, 1927*a* 1928; JÖRGENSEN, 1928.
„ *quercifolium* L. . . .	12		JÖRGENSEN, 1928.
„ *racemiflorum* DUN. .	12		„ „
„ *Roberti-Eliae* BITTER	36		„ „
„ *Robinsonianum* BITTER	36		„ „
„ *suffruticosum* SCHAMBR	12		„ „
„ *sysimbrifolium* LAM. .	12		JÖRGENSEN & CRANE, 1927; DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *Tomato* PHIL. f. . .	12		DE VILMORIN & SIMONET, 1928.
, *triflorum* NUTT. . . .	12		„ „ „ „ „
„ *tuberosum*		ca. 36	NĚMEC, 1899.
		33–34	MARTINS MANO, 1905.
	14–16		YOUNG, 1923.
		± 36	MÜLLER, K., 1925.
„ *tuberosum* (domestic)	24		(ADAMS) given by SALAMAN, 1928.
„ *tuberosum* L.	24		JÖRGENSEN, 1928.
„ *tuberosum* var. . . .	24		DE VILMORIN & SIMONET, 1927*a*
„ *tuberosum* varieties:			
Akita Poraris		48	FUKUDA, 1927.
Akita Usukawa		48	„ „
American Wonder	24		STOW [1]), 1926–27.
		48	FUKUDA, 1927.

[1]) STOW (1926—27) stated that abnormal division in the pollen mother-cells was shown in a greater degree in the group American Wonder, Burbank's Seedling, Ekishirazu, Green Mountain, Michigan, Nemuro Murasaki, Rural New Yorker, and Snowflake, than in the other varieties studied by him.

SOLANACEAE (continued)	n	2n	
Beauty of Hebron		48	FUKUDA, 1927.
Bella donna	24		STOW, 1926, 1926–27.
Bishop HORT.		48	DE VILMORIN & SIMONET, 1928.
Bovee		48	FUKUDA, 1927.
Burbank's Seedling.	24		STOW, 1926–27.
Deodara	24		„ „
Early Beauty of Hebron. . .		48	FUKUDA, 1927.
Early Mother		48	„ „
Early Ohio		48	„ „
	24 & ca. 48		SMITH, 1927.
Early Puritan.		48	FUKUDA, 1927.
Early Rose		ca. 36 [1]	LUTMAN, 1925.
		48	FUKUDA, 1927; SMITH, H. B., 1927.
Early Rose HORT.	24		DE VILMORIN & SIMONET, 1928.
	48		„ „ „ „ „
Ekishirazu	24		STOW, 1926–27.
Ekishirazu No. 12		48	FUKUDA, 1927.
Ekishirazu No. 45		48	„ „
Eureka.		48	„ „
Gratiola	24		STOW, 1926, 1926–27.
Green Mountain.		ca. 36 [1]	LUTMAN, 1925.
	24		STOW, 1926–27.
Irish Cobbler		ca. 36 [1]	LUTMAN, 1925.
		48	FUKUDA, 1927.
Iwata Akaimo.		48	„ „
Kamiyaimo.		48	„ „
King Edward VII		48	„ „
Look Out Mountain		ca. 36 [1]	LUTMAN, 1925.
Majoran		48	FUKUDA, 1927.
Marschal Hindenburg . . .	24		STOW, 1926, 1926–27.
May Queen		48	FUKUDA, 1927.
McCormick	24		SMITH, H. B., 1927.
McIntyre.	24		SMITH, H. B., 1927.
Michigan.	24		STOW, 1926–27.
Morioka Kairyo		48	FUKUDA, 1927.
Moustache Leaved Kidney. .		48	„ „
Nemuro		48	„ „
Nemuro murasaki	24		STOW, 1927–27
Nemuro No		48	FUKUDA, 1927.
Northern Star		48	„ „
Parnassia	24		STOW, 1926, 1926–27.

[1]) Counts ranged from 36 to 45.

SOLANACEAE (continued)	n	2n	
Pepo	24		STOW, 1926, 1926–27.
Pepo HORT.	24		DE VILMORIN & SIMONET, 1928.
Pirola	24		STOW, 1926, 1926–27.
Reeves Rose		48	FUKUDA, 1927.
Rural New Yorker	24		STOW, 1926–27.
		48	FUKUDA, 1927.
Russet Rural	24 & 48		SMITH, H. B., 1927.
Sir John le Lewelyn		48	FUKUDA, 1927.
Snowflake	24		STOW, 1926–27.
		48	FUKUDA, 1927.
Tuno	24		STOW, 1926, 1926–27.
Wase Shiro		48	FUKUDA, 1927.
Solanum tuberosum var. *oculosum* ALEF. „*Pirozhof*"		48–59	LEVITSKY & BENETZKAJA, 1927.
„ *tuberosum* var. *oculosum* ALEF. „*Tannenzapfen*"		48, 49, 53	LEVITSKY & BENETZKAJA, 1927.
„ *tuberosum* var. *oculosum* ALEF. „*Woltmann*" [1])		48–50	LEVITSKY & BENETZKAJA, 1927
„ *utile*	36		(ADAMS) given by SALAMAN, 1928.
„ *villosum* MOENCH.	24		DE VILMORIN & SIMONET, 1927*a*
„ *villosum* WILD. (= *S. luteum* WILD)	24		DE VILMORIN & SIMONET, 1928.
„ *Wendlandi* HOOK. f.	12		DE VILMORIN & SIMONET, 1928.
„ *xanthocarpum* SCHRAD. et WENDL.	12		JÖRGENSEN, 1928.
„ *Zuccagnianum* DUN.	12		„ „
„ *nigrum* × *S. luteum*	$24 + \frac{12_1}{2}$ [2])	60	„ „
„ *nigrum* × *S. luteum* (tetraploid)	60 [3])	ca. 120	„ „
„ *utile* × *S. tuberosum* F_1	$24 + \frac{12_1}{2}$ [4])		(ADAMS) given by SALAMAN, 1928.

[1]) Syndiploid plates were found in this species.

[2]) Though such arrangement was clear in some cells, in most cells it could not be definitely ascertained. In the division leading to megaspore formation some of the univalents were usually not included in the nuclei.

[3]) Some irregularities occurred.

[4]) At homeotypic metaphase the number varied from 25 to 39, with 29, 30 and 31 predominating. Many chromosomes were not included in the nuclei of the tetrad.

SOLANACEAE (continued)	n	2n	
Solanum (continued)			
Solanum utile × *S. tuberosum*			
F_2 [1])	27–30,	48–60,	(ADAMS) given by SALAMAN, 1928.
	30–38	60–72	(ADAMS) given by SALAMAN, 1928.
Solandra grandiflora Fw. . . .	11,(12)		CAMPIN, 1924.
NICOTIANA [2])			
Section Tabacum			
Nicotiana Rusbyi	12		BRIEGER, 1928*a*.
„ *Rusbyi* BRITT. . . .	12		„ 1927, 1928*b*.
„ *Tabacum* [3])	24		WHITE, O. E., 1913; GOODSPEED, 1923, 1924; CLAUSEN & MANN, 1924; CLAUSEN & GOODSPEED, 1925, 1926*a*; CLAUSEN, R. E., 1928*b*; BRIEGER, 1928*a*.
	24	48	CHRISTOFF, 1925.
		54–56	NIKOLAEWA (1924), 1925.
„ *Tabacum* L.	24		DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *Tabacum* L. var. *angustifolia* MILL. . .	24		DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *Tabacum* var. *Dubek*		48	EGHIS, 1927.
	24	48 [4])	RYBIN, 1927*b*.
„ *Tabacum* L. var. *fruticosa* HORT.	24		DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *Tabacum* L. var. *havanensis* (Cuba) . .	24		CHRISTOFF, 1925, 1928; BRIEGER, 1927, 1928*b*.
		24 [5])	RUTTLE, 1928.
„ *Tabacum* L. var. *macrophylla*	24	48	CHRISTOFF, 1925, 1928.

[1]) Families of two types were produced.

[2]) This classification under sections is according to EAST (1928*a*), following COMES (1899).

[3]) GOODSPEED (1924) states that he examined 5 varieties of this species.

[4]) According to RYBIN (1927*b*) the chromosomes of *N. Tabacum* var. *Dubek* are more alike in size, while those of *N. rustica* (*Turkestan* var. *Kolmak*) were found to differ from one another in size.

[5]) Two such haploids appeared in an F_1 (*Cuba* × *sylvestris*) population. In both this haploid and the haploid *purpurea* plant, examination of root-tips showed that roots were either entirely diploid, entirely haploid, or part haploid and part diploid.

SOLANACEAE (continued)	n	2n	
NICOTIANA (continued)			
Section T a b a c u m (continued)			
Nicotiana Tabacum L. var. *purpurea*	24 [1]		GOODSPEED & CLAUSEN, 1927*b*; GOODSPEED & OLSON, 1928.
		48	RUTTLE, 1928.
	$< \frac{24_I}{2}$ [1]		GOODSPEED & OLSON, 1928.
	48		„ „ „ „
	$\frac{24_I}{2}$ [2]		CHIPMAN & GOODSPEED, 1927.
		24 [2]	RUTTLE, 1928.
„ *Tabacum* L. var. *sanguinea* HORT. . . .	24		DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *Tabacum* L. var. *Sao Felix*		48	RYBIN, 1927*b*; EGHIS, 1927.
„ *Tabacum* L. (White flowering variety) .	24		CHRISTOFF, 1928.
„ *Tabacum* form „Corrugated"	$23+1_I$		CLAUSEN & GOODSPEED, 1926*b*.
„ *Tabacum* form „Enlarged"	$24+1_I$		„ „ „ 1924.
„ *Tabacum* form „Fluted"	$23+1_I$ [3]		„ „ „ 1926*a*.
„ *tomentosa*	12		GOODSPEED & CLAUSEN, 1927*b*; CLAUSEN, R. E., 1928*b*; BRIEGER, 1928*a*.
„ *tomentosa* R. & P. .		24	CHRISTOFF, 1928.
Section R u s t i c a			
Nicotiana acuminata	12		GOODSPEED, 1923, 1924; CLAUSEN, R. E., 1928*b*.
„ *acuminata* GRAH. . .	12		CHRISTOFF, 1928.
„ *acuminata* HOOK. .	12		VILMORIN & SIMONET, 1927*a*, 1928.

[1]) The result of X-raying seedlings (GOODSPEED & OLSON (1928)) was that half of the number contained 24 chromosomes at the heterotypic metaphase and showed normal division. The remainder showed abnormal somatic and meiotic divisions and the chromosome number in the pollen-mother-cells was less than normal (23, 21, $23 + 2_1$, $23 + 1_1$, $22 + 2_1$). In three of the variants so produced, one univalent partner possessed a small appendage like a satellite. In cases with 21 and $22 + 2_1$ chromosomes, one chromosome of a pair bore a satellite.

[2]) This haploid appeared in an F_1 (*purpurea* × *sylvestris*) population described by CLAUSEN & MANN (1924). RUTTLE (1928) refers to another haploid, which appeared in an F_1 (*purpurea* × *tomentosa*) population as well.

[3]) In most cases division of the one univalent did not occur.

SOLANACEAE (continued)	n	2n	
NICOTIANA (continued)			
Section Rustica (continued)			
Nicotiana alata	8–10		GOODSPEED, 1923.
	8		CHRISTOFF, 1925.
	9		GOODSPEED & CLAUSEN, 1927*b*; CLAUSEN, R. E., 1928*b*.
„ *alata* LINK (*N.. affinis*)	9–10		DE VILMORIN & SIMONET, 1927*c*
	9 [1]		GOODSPEED, 1924; DE VILMORIN & SIMONET 1928.
„ *alata* LK. & OTTO . .	8	16	CHRISTOFF, 1928.
„ *alata* var. *grandiflora*	9 [2]	18 [3]	RUTTLE, 1927.
„ *angustifolia*	10		CLAUSEN, R. E., 1928*b*.
„ *attenuata*	12		„ „ „ „
„ *viscosa* LEHM (= *N. attenuata* var.) [4] .	24		CHRISTOFF, 1928.
„ *Bigelovii*	24		GOODSPEED, 1923, 1924; GOODSPEED & CLAUSEN, 1927*a*; CLAUSEN, R. E., 1928*b*.
„ *Bigelovii* WATS. . .	24	48	CHRISTOFF, 1928.
„ *Clevelandii* (= *N. Bigelovii* var (?)) [4]	24		CLAUSEN, R. E., 1928*b*
„ *multivalvis* (= *N. Bigelovii* var.) [4]. .	24		„ „ „
„ *multivalvis* PURSH. (= *N. Bigelovii* var.) [4]	24		CHRISTOFF, 1928.
„ *quadrivalvis* (= *N. Bigelovii* var) [4]	24		CLAUSEN, R. E., 1928*b*.
„ *quadrivalvis* LINDL (= *N. Bigelovii* var.) [4]	24		CHRISTOFF, 1928.
„ *caudigera* RH. . . .	12	24	„ „
„ *cordifolia*	12		CLAUSEN, R. E., 1928*b*.
„ *Forgetiana*.	9		MALLOCH & MALLOCH, 1924; CLAUSEN, R. E., 1928*b*; DE VILMORIN & SIMONET, 1928.
„ *Forgetiana* HORT. .	9–10		DE VILMORIN & SIMONET, 1927*a*

[1]) GOODSPEED (1:24) found 10 chromosomes frequently, but considered 9 to be the predominating number.

[2]) As a result of non-disjunction, 8 and 10 chromosomes could be counted in the divisions in the pollen-mother-cells.

[3]) Two pairs of satellites were distinguished.

[4]) This synonym was taken from EAST (1928*a*).

SOLANACEAE (continued)	n	2n	
NICOTIANA (continued)			
Section Rustica (continued)			
Nicotiana glauca	12		GOODSPEED, 1923, 1924; CLAUSEN, E. R., 1928*b*.
„ *glauca* GRAH. . . .	12	24	CHRISTOFF, 1928.
„ *glutinosa*	12		GOODSPEED, 1923, 1924; CLAUSEN & GOODSPEED, 1925; GOODSPEED & CLAUSEN, 1927*a*; CLAUSEN, R. E., 1928*b*; BRIEGER, 1928*a*.
„ *glutinosa* L.	12		DE VILMORIN & SIMONET, 1927*a*, 1928.
	12	24	CHRISTOFF, 1928.
„ *Langsdorfii* [1]) . . .	9		GOODSPEED, 1923, 1924; CLAUSEN, R. E., 1928*b*.
	9	18	(KOSTOFF), given by EAST, 1928*a*.
„ *Langsdorfii* WEINM.	8	16	CHRISTOFF, 1928.
„ *longiflora*	10 [2])		GOODSPEED, 1923, 1924; GOODSPEED & CLAUSEN, 1927*b*; CLAUSEN, R. E., 1928*b*.
„ *longiflora* CAV. . . .	10		CHRISTOFF, 1928; DE VILMORIN & SIMONET, 1928'
„ *plumbaginifolia* VIV. (= *N. longiflora* var.) [3])		20	CHRISTOFF, 1928.
„ *nudicaulis*	24		GOODSPEED, 1923, 1924; CLAUSEN, R. E., 1928*b*.
„ *nudicaulis* WATS . .	24	48	CHRISTOFF, 1928.
„ *Palmeri* (?)	12	24	„ „
„ *paniculata*	12		GOODSPEED, 1923, 1924; GOODSPEED, CLAUSEN & CHIPMAN, 1926; CLAUSEN, R. E., 1928*b*.
„ *paniculata* L. . . .	24		EAST, 1921.
	12		EAST, 1928*a*; DE VILMORIN & SIMONET, 1927*a*, 1928.
	12	24	CHRISTOFF, 1928.
„ *repanda*	24		CLAUSEN, R. E., 1928*b*.
„ *rustica* [4])	24		GOODSPEED, 1923, 1924; CHRISTOFF, 1925; CLAUSEN, R. E., 1928*b*.

[1]) GOODSPEED (1924) states that he examined 2 varieties of this species.
[2]) GOODSPEED (1924) considered 10 to be the predominating number, though 9 or 10 chromosomes appeared.
[3]) This synonym was taken from EAST (1928*a*).
[4]) GOODSPEED (1924) states that he examined 3 varieties of this species.

SOLANACEAE (continued)	n	2n	
NICOTIANA (continued)			
Section R u s t i c a (continued)			
		48–46	NIKOLAEWA, 1925.
Nicotiana rustica L.	24		EAST, 1921; DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *rustica* var. *brasilia*	24		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
„ *rustica* L. var. *brasila*	24	48	CHRISTOFF, 1928.
„ *rustica* L. var. *humilis*	24		„ „
„ *rustica* var. *pumila* .	24		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
„ *rustica* var. *scabra* .	24		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
„ *rustica* L. var. *Shvitzent* . .		48	RYBON, 1927*b*; EGHIS, 1927.
„ *rustica* L. var. *texana*	24		CHRISTOFF, 1928.
„ *rustica* L. *Turkestan* var *Kolmak* . . .	24	48 [1]	RYBIN, 1927*b*.
„ *Sanderae*	8		CHRISTOFF, 1928.
„ *Sanderae* HORT. . .	9–10		DE VILMORIN & SIMONET, 1927*a*
	9		MALLOCH & MALLOCH, 1924; CLAUSEN, R. E., 1928*b*; DE VILMORIN & SIMONET, 1928.
„ *solanifolia*	12		CLAUSEN, R. E., 1928*b*.
„ *solanifolia* WALP. .	24		DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *solanifolia* WOLF. (*N. cardiophylla* RH.	12	24	CHRISTOFF, 1928
„ *solanifolia* (?) (= *N. rustica* var. *humilis*)	24	28	„ „
„ *suaveolens*	18 [2]		GOODSPEED, 1923, 1924.
	16 [3]		GOODSPEED & CLAUSEN, 1927*a*; CLAUSEN, R. E., 1928*b*.
„ *suaveolens* LEHM. . .	16	32	CRISTOFF, 1928.

[1]) According to RYBIN (1927*b*) the chromosomes of *N. Tabacum* var. *Dubek* are more alike in size, while those of *N. rustica* (*Turkestan* var. *Kolmak*) were found to differ from one another in size.

[2]) Though GOODSPEED (1924) gave a lower number, he stated that there was doubt as to its correctness because of the small amount of available material, and expressed the possibility that the number be 18.

[3]) GOODSPEED & CLAUSEN (1927*a*) considered the previous determination (n = 18) to be incorrect.

SOLANACEAE (continued)	n	2n	
NICOTIANA (continued)			
Section Rustica (continued)			
Nicotiana suaveolens (from Australia)	20		(GOODSPEED), given by EAST, 1928*a*.
„ *suaveolens* (from Australia)	32		(GOODSPEED), given by EAST, 1928*a*.
„ *sylvestris*	12		GOODSPEED, 1923, 1924; CLAUSEN & MANN, 1924; CLAUSEN & GOODSPEED, 1926*a*; GOODSPEED & CLAUSEN, 1927*b*; CLAUSEN, R. E., 1928*b*; BRIEGER, 1928*a*.
„ *sylvestris* SPEG. & COMES	12		DE VILMORIN & SIMONET, 1927*a*, 1928.
	12	24	CHRISTOFF, 1928.
„ *trigonophylla* . . .	12		CLAUSEN, R. E., 1928*b*.
„ *trigonophylla* DUN. .	24		DE VILMORIN & SIMONET, 1927*a*, 1928.
	12	24	CHRISTOFF, 1928.
Section (?)			
Nicotiana cerinthoides VITUP. .	9		DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *clarionenis*.	24		CLAUSEN, R. E., 1928*b*.
„ *noctiflora* HOOK. . .	9		DE VILMORIN & SIMONET, 1927*a*, 1928.
„ *petiolaris* SCHLECHT.	24		DE VILMORIN & SIMONET, 1927*a*, 1928.
Nicotiana Hybrids:			
Nicotiana alata × *N. Langsdorfii*	8 [1])		CHRISTOFF, 1928.
„ *Bigelovii* × *N. glutinosa*	12 & 24, 30 & 6, etc.[2])		GOODSPEED & CLAUSEN, 1927*a*
„ *Bigelovii* × *N. suaveolens* and recip. .	18,26 & 14,[2]) 39 & 1,etc.		„ „ „ „

[1]) Both heterotypic and homoeotypic divisions were regular.

[2]) Apparently there is no pairing of chromosomes; there is great irregularity in the division of the chromosomes to the two poles.

SOLANACEAE (continued)	n	2n	
NICOTIANA (continued)			
Nicotiana Hybrids (continued):			
Nicotiana digluta [1]) × *N. glutinosa*	$\frac{12+24_{I}}{2}$		CLAUSEN, R. E., 1928*a, b*.
„ *digluta* × *N. Tabacum*	$\frac{24+12_{I}}{2}$		„ „ „ „ „
„ *digluta* × *N. Tabacum* F_2	$\frac{24+0_{I}-8_{I}}{2}$		„ „ „ „
„ *digluta* × *N. Tabacum*) × *N. Tabacum*	$\frac{24+0_{I}-8_{I}}{2}$ [2])		„ „ „ „
„ *digluta* × *N. Tabacum*) × *N. digluta* .	$\frac{m+n_{I}}{2}$ [3])		„ „ „ „
„ *glauca* × *N. Langsdorfii*	$\frac{9+3_{I}}{2}$ [4])		(KOSTOFF), given by EAST, 1928*a*.
„ *glauca* × *N. Langsdorfii* × *N. Langsdorfii*		21 [5]), 30, 32	(KOSTOFF, given by EAST, 1928*a*.
glutinosa × *N. Tabacum* var. *purpurea* [1])	$\frac{12+0_{I}-12_{I}}{2}$ [6])		CLAUSEN & GOODSPEED, 1925.
		36	CLAUSEN, R. E., 1928*b*.
„ *glutinosa* × *N. Tabacum* var. *purpurea* F_2	36 [7])		CLAUSEN, & GOODSPEED, 1925.
„ *longiflora* × *N. alata*	$9+1_{I}$		GOODSPEED & CLAUSEN, 1927*b*.

[1]) This name has been applied to a line of plants coming from the F_1 of *N. glutinosa* × *N. Tabacum* having 36 haploid chromosomes. (CLAUSEN & GOODSPEED, 1925). See this hybrid below.

[2]) In one plant there were $25 + 2_1$.

[3]) m was = or > 24 and m + n = 36.

[4]) Reduction division follows the *Drosera* scheme.

[5]) This chromosome number is made up as follows: ($2_3 + 7_2 + 1_1 = 21 = 2n$).

[6]) The behavior of the chromosomes in this hybrid closely parallels that seen in the F_1 of *N. Tabacum* and *N. sylvestris*.

[7]) There were no univalents and all the chromosomes moved to the poles in a regular way.

SOLANACEAE (continued)	n	2n	
Nicotiana Hybrids (continued):			
Nicotiana longiflora × *N. Sanderae*	$\frac{8 + 2_1}{2}$ [1])		CHRISTOFF, 1928.
„ *paniculata* × *N. Langsdorfii*	$\frac{18_1}{2}$ [2])		„ „
„ *rustica* × *N. paniculata*	$\frac{12+6_1}{2}$ [3])		„ „
„ *rustica* var. *brasilia* × *N. paniculata* . .	$\frac{12+1_1-6_1}{2}$ [4])		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
(„ *rustica* var. *brasilia* × *N. paniculata*) × *N. paniculata* . . .	$\frac{12+1_1-11_1}{2}$ [5])		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
(„ *rustica* var. *brasilia* × *N. paniculata*) × *N. rustica* var. *brasilia*	$\frac{18+1_1-6_1}{2}$, $\frac{24+0_1-4_1}{2}$		GOODSPEED, CLAUSEN & CHIPMAN, 1926.
(„ *rustica* × *N. paniculata*) × *N. Langsdorfii*		24, 32 [6])	(KOSTOFF), given by EAST, 1928*a*.
„ *rustica* × *N. Tabacum* (white)	$\frac{48_1}{2}$ [7])		CHRISTOFF, 1928.
„ *rustica* × *L.* var.			

[1]) Reduction division follows the *Drosera* scheme. Regularly two univalents lagged outside the plate but cases showing four were found.

[2]) No bivalents were observed but distribution to the two poles is fairly regular

[3]) The number of chromosomes in the two homoeotypic plates shows fairly even distribution of the univalents along with the bivalents has occurred on the heterotypic spindle.

[4]) On the heterotypic spindle the twelve bivalents were distributed regularly to the poles, but the twelve univalents, irregularly and without division.

[5]) In general, conditions were similar to those described in foot-note [1]), but there were evidences of division of univalents on the heterotypic spindle in some cases.

[6]) Where 2n = 24, one trivalent was present. Where 2n = 32, five trivalents were present.

[7]) The first division was so regular as to make it difficult to be certain whether pairs had been formed or not. Very irregular homoeotypic division followed with frequen t formation of diads instead of tetrads.

SOLANACEAE (continued)	n	2n	
Nicotiana Hybrids (continued):			
Shvitzent × *N. Tabacum* var. *Dubek* .		48	EGHIS, 1927.
Nicotiana rustica var. *Mahorka* #1 × (*N. Tabacum* L. var. *Dubek* × *N. rustica* var. *Kolmak*)		67–72	RYBIN, 1927*b*.
(„ *rustica* × *N. Tabacum* var. *sanguinea*) × *N. Tabacum* var. *sanguinea*	36–38	70–72	(KOSTOFF), given by EAST, 1928*a*.
	32	53 [1]	(KOSTOFF), given by EAST, 1928*a*.
[(*Nicotiana rustica* × *N. Tabacum* var. *sanguinea*) × *N. Tabacum* var. *sanguinea*] × *N. Tabacum* var. *sanguinea* .	30 [2]		(KOSTOFF), given by EAST, 1928*a*.
Nicotiana suaveolens × *N. Bigelovii*	$\frac{40_I}{2}$ [3]		CHRISTOFF, 1928
„ *suaveolens* × *N. glutinosa*	$\frac{28_I}{2}$ [4]		„ „
„ *sylvestris* × *N. Tabacum*	$12 + \frac{12_I}{2}$		CLAUSEN, R. E., 1928*b*; GOODSPEED & CLAUSEN, 1928.
„ *sylvestris* × *N. Tabacum* vars. *angustifolia* „*Cuba* and *Miradato*"	$12 + \frac{12_I}{2}$		GOODSPEED, 1923.
„ *sylvestris* × *N. Tabacum* form „fluted"	$12 + \frac{1_I - 11_I}{2}$		CLAUSEN & GOODSPEED, 1926*a*.

[1]) One plant having 32 chromosomes at first metaphase had only 53 somatic chromosomes.

[2]) One plant of this second back-cross was found to have 30 chromosomes at the first metaphase.

[3]) There is no pairing and the chronosomes are scattered very irregularly over the spindle during the first division. The second division is regular and all the chromosomes on the spindles undergo an equational split, leaving some of the descendants of the lagging chromosomes of the first division to form micro nuclei.

[4]) No bivalents were observed and many lagging chromosomes appeared in the anaphase figures.

SOLANACEAE (continued)	n	2n	
Nicotiana Hybrids (continued):			
Nicotiana sylvestris × *N. Tabacum* var. *purpurea*	$\frac{12+0_{I}-12_{I}}{2}$ [1])		GOODSPEED & CLAUSEN, 1927*b*.
„ (*sylvestris* × *N. Tabacum* var. *purpurea*) × *N. sylvestris* . .	$\frac{12+0_{I}-12_{I}}{2}$		GOODSPEED & CLAUSEN, 1927*b*, 1928.
„ *sylvestris* × *N. tomentosa*	$\frac{24_{I}}{2}$		CLAUSEN, R. E., 1928*b*; GOODSPEED & CLAUSEN, 1928.
„ *Tabacum* var. *Cuba* × *N. alata*	$\frac{8+16_{I}}{2}$ [2])		CHRISTOFF, 1928.
„ *Tabacum* × *N. glauca* , ...	$\frac{12+12_{I}}{2}$ [3])		(KOSTOFF), given by EAST 1928*a*.
„ *Tabacum* × (*N. Langsdorfii* × *N. Sanderae*)		33	(KOSTOFF), given by EAST 1928*a*.
„ *Tabacum* L. var. *Cuba* × *N. Rusbyi* BRITT.	$\frac{12+12_{I}}{2}$		BRIEGER, 1927, 1928*b*.
(„ *Tabacum* L. var. *Cuba* × *N. Rusbyi* BRITT.) × *N. Tabacum* L. var. *Cuba* .	24	48	BRIEGER, 1928*b*.
(„ *Tabacum* L. var. *Cuba* × *N. Rusbyi* BRITT) × *N Tabacum* L. var. *Cuba*; Plant 1E	24–36 [4])	60	„ „
(„ *Tabacum* L. var. *Cuba* × *N. Rusbyi* BRITT.) × *N. Taba-*			

[1]) On the heterotypic spindle the 12 bivalents are distributed regularly to the poles but the 12 univalents irregularly and without division.

[2]) Reduction division was quite irregular, bivalents forming aplate while univalents passed to the poles, some presumably dividing, since as many as 38 were found on the two homoeotypic plates'

[3]) Reduction division follows the *Drosera* scheme.

[4]) Each daughter nucleus received at least 24 and not more than 36 chromosomes. The arrangement at heterotypic metaphase is represented by $12 + 12_{2}$ or $12 + 12_{2} + 10 + 10_{1}$).

SOLANACEAE (continued)	n	2n	
Nicotiana Hybrids (continued)			
cum L. var. *Cuba*; Plant 8B	27–30 [1]	54	BRIEGER, 1928*b*.
Nicotiana Tabacum L. var. *Dubek* × *N. rustica* L. var. *Kolmak* . . .	48 [2]	72	RYBIN, 1927*b*
		48	EGHIS, 1927
„ *Tabacum* L var. *Dubek* × *N. rustica* L. var. *Shvitzent* . . .		72	RYBIN, 1927*b*.
(„ *Tabacum* L. var. *Dubek* × *N. rustica* L. var. *Kolmak*) × *N. rustica* L. var. *texana*	48 [3]	96	„ „
„ *Tabacum* (white) × *N. Sanderae*	$8+\frac{16_{I}}{2}$ [4]		CHRISTOFF, 1928.
Tabacum var. *macrophylla* × *N. sylvestris* [5]		24	CLAUSEN & MANN, 1924.
„ *Tabacum* var. *purpurea* × *N. sylvestris* .		24	„ „ „ „
„ *tomentosa* × *N. Tabacum*	$12+\frac{0\text{–}12_{I}}{2}$ [6]		GOODSPEED & CLAUSEN, 1927*b*.
	$12+\frac{12_{I}}{2}$		CLAUSEN, R. E., 1928*b*; GOODSPEED & CLAUSEN, 1928.
„ *Tabacum* × *Verbascum phlomoides* . .		<54–56 [7]	NIKOLAEWA, 1925.

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[1]) Each daughter nucleus received 24 to 30 chromosomes in one case and 18 to 36 in another case. At the heterotypic metaphase 29—30 were the predominating numbers.

[2]) Differences in the sizes of these 48 chromosomes led RYBIN (1927*b*) to suppose that they were 24 bivalents and 24 univalents, though the exact number of the latter was not determined. Both hetero- and homoeotypic metaphases showed great irregularities.

[3]) RYBIN (1927*b*) found great regularity in the meiosis of this hybrid and though more than 48 chromosomes were frequently seen in the heterotypic metaphase, such was explained by premature separation of some of the chromosomes.

[4]) Reduction divisions resemble those of *N. Tabacum* × *N. alata*' (See foot-note [8]) previous page).

[5]) This was incorrectly given in GAISER (1926).

[6]) „The distributional mechanism is the same as that in F_1 *paniculata-rustica* and F_1 *sylvestris-tabacum*." (GOODSPEED & CLAUSEN, 1927*b*). See foot-note [4]) p. 308.

[7]) By pollination of castrated flowers of *N. Tabacum* by pollen of *Verbascum phlomoides*, pollen tubes were formed but never reached the ovules. Some ovules seeme to develop as a result of the irritation and had cells like *N. Tabacum*, but wirh less chromosomes.

SOLANACEAE (continued)	n	2n	
Salpiglossis sinuata Ruiz. et Par.	22		de Vilmorin & Simonet, 1928.
Petunia nyctaginiflora Juss.	7		Ferguson, M., 1928.
„ *violacea* Lindl. [1])	7	14	Skalinska & Cuchtman, 1927,
„ *violacea*	7 [2])		Matsuda, 1928.
„ *violacea* Lind. (variegated strain)		14 [3])	Malinowski, 1928.
„ *violacea* hybrid var. Hort.	7		de Vilmorin et Simonet, 1927*a*, 1928.
„ *violacea* „*Superbissima*"	14		de Vilmorin et Simonet, 1927*a* 1928.
Datura fastuosa L.	12		de Vilmorin & Simonet, 1927*a* 1928.
„ *ferox*	12		Blakeslee, 1928.
„ *Leichardtii*	12		„ „
„ *meteloides*	12		„ „
„ *meteloides* D.C.	12		de Vilmorin & Simonet, 1927 1928
„ *quercifolia*	12		Blakeslee, 1928.
„ *Stramonium* [4])		24	Blakeslee, Belling & Farnham, 1923.
	12		Belling, 1927*a*, *d*; Blakeslee 1928.
„ *Stramonium* (haploid) [4])	12		Blakeslee, Morrison, Avery 1927; Belling, 1927*a*, *d*.
	12_1 [5])	12	Belling & Blakeslee, 1927.
„ *Stramonium* (mutants) [4])	$11+1_1$		Belling, 1927*a*, *d*.
	$11+1_3$		Belling, 1927*a*, *d*; Gager & Blakeslee, 1927 [6]).
	11+2		Gager & Blakeslee, 1927 [6])
	12_4		Blakeslee, Belling & Farnham, 1923, Belling, 1927*d*.
	11_3+1_2		Belling, 1927*d*.

[1]) The extreme types of this polymorphic race showed no differences in chromosome number but in chromosome form. In zygomorphic flowers satellites might be found but in normal flowers rarely. Variation in the gametic chromosome sets occur at the heterotypic metaphase.

[2]) Besides cells showing normal arrangement as 7 pairs, there were cells showing 6 paired + 2 univalents. Irregularities in division also occurred.

[3]) In large purple flowers of this strain the chromosomes were larger than in the small lilac flowers.

[4]) For earlier references, see Gaiser, 1926, pp. 436—437.

[5]) From this 1A haploid line, all the balanced chromosomal types, as well as all primary and secondary (2n + 1) types, have been obtained.

[6]) As a result of radium emanations, Gager & Blakeslee (1927) produced 2n + 1 and 2n + 2 chromosomal types.

SOLANACEAE (continued)	n	2n	
Datura (continued)			
Datura Stramonium (Primary Mutants)[1]:		25	BELLING & BLAKESLEE, 1926.
Buckling, Cocklebur, Echinus Elongate, Globe, Glossy, Ilex, Microcarpic, Poinsettia, Reduced, Rolled . . .		25	BLAKESLEE given by DAVENPORT, 1924, 1926; BLAKESLEE, 1925.
Globe		26	BLAKESLEE given by DAVENPORT, 1926.
Divergent		25	BLAKESLEE given by DAVENPORT, 1926.
Reduced		26	BLAKESLEE given by DAVENPORT, 1926.
Spinach		25	BLAKESLEE, given by DAVENPORT, 1924, 1926.
Datura Stramonium „Nubbin"[2])		25	BLAKESLEE given by DAVENPORT, 1925, 1926; GAGER & BLAKESLEE, 1927.
„ *Stramonium „Poinsettia"*		25	BLAKESLEE & FARNHAM, 1923.
„ *Stramonium „Wiry"* .		$24+\frac{1}{2}$	BLAKESLEE given by DAVENPORT, 1924; BLAKESLEE, 1925.
„ *Stramonium* (Secondary Mutants)[1]) . . .		25	BELLING & BLAKESLEE, 1926.
Maple, Mutilated, Polycarpic, Strawberry, Sugarloaf, Undulate, Wedge		25	BLAKESLEE given by DAVENPORT, 1924, 1925, 1926; BLAKESLEE, 1925.
Dwarf, Scalloped, Smooth . .		25	BLAKESLEE, 1925; BLAKESLEE, given by DAVENPORT, 1925, 1926.
one secondary mutant . . .		$24+\frac{1}{2}$	BELLING, 1927*a*.
Datura Stramonium „Hedge" .		25	BLAKESLEE given by DAVENPORT, 1926.
„ *Stramonium „Pinched"*		25	BLAKESLEE given by DAVENPORT, 1926.
„ *tatula*	12		VON BOENICKE, 1911
„ *Leichardtii* × *D. meteloides*	12		BLAKESLEE, 1928.

1) For earlier references, see GAISER 1926, pp. 436—437.
2) „Nubbin" was found to be a compound chronosomal type containing the ordinary 2n set of chromosomes plus a chromosome consisting of 1/2 mutilated plus 1/2 strawberry. (BLAKESLEE, 1927).

SOLANACEAE (continued)			
Datura (continued)			
Datura Leichardtii × *D. quercifolia*	12		BLAKESLEE, 1928.
„ *Stramonium* × *D. ferox*	12		„ „
„ *Stramonium* × *D. quercifolia*	12		„ „
„ *Stramonium* (2n = 48) × *D. Stramonium* (2n = 24)		24, 25, 35 36, 48	BLAKESLEE, BELLING & FARNHAM, 1923.
SCROPHULARIACEAE			
VERBASCUM [1])			
Section I. Lychnitis			
Subsection I. Lychnitidea			
Verbascum austriacum SCHOTT.	16 [2])		HÅKANSSON, 1926*a*.
„ *Chaixii* VILL. . . .	probably 16		„ „
„ *Lychnitis* L. . . .	16		„ „
„ *maurum* MAIRE & MURB.	32		„ „
„ *nigrum* L.	15		„ „
„ *Ternacha* HOCHST.	24		„ „
Subsection II. Blattarioidea			
Verbascum phoeniceum	16		(PERINO) given by TISCHLER, 1916.
„ *phoeniceum* L. . .	16		HÅKANSSON, 1926*a*.
„ *pyramidatum* M.B.	16 [3])		„ „
Section II. Thapsus			
Subsection I. Blattaria			
Verbascum Blattaria	16		(PERINO) given by TISCHLER, 1916.
„ *Blattaria* (white) .	15	30	HÅKANSSON, 1926*a*.
„ *Blattaria* (yellow) .	16		„ „
„ *virgatum* WITH. . .		32	„ „
Subsection II. Euthapsi			
Verbascum phlomoides	16		(PERINO) given by TISCHLER, 1916.
	16	32	NIKOLAEWA, 1925.
„ *phlomoides* L. . . .	16		HÅKANSSON, 1926*a*.

[1]) The following species are classified under sections according to ENGLER & PRANTL

[2]) The number of the chromosomes for this species was judged by the chromosome relations of one of its hybrids.

[3]) The number of chromosomes for this species was calculated from the chromosome number of *V. densiflorum* (*n* = 16), which is the hybrid *V. phoeniceum* (*n* = 16) × *V. pyramidatum*.

SCHROPHULARIACEAE (continued)	n	2n	
Verbascum thapsiforme SCHRAD.		32	HÅKANSON, 1926*a*.
„ *Thapsus* L.	18 [1]		„ „
Section (?)			
Verbascum montanum SCHRAD	16		SCHMID, 1906.
„ *pulverulentum* . .	16		(PERINO) given by TISCHLER, 1916.
CELSIA [2]			
Section I. Aulacospermae			
Celsia brevipedicellata ENGL. .	23		HÅKANSSON, 1926*a*.
„ *keniensis* MURB.	23		„ „
Section II. Bothrospermae			
Subsection I. Nefflea			
Celsia orientalis L.	24		„ „
Subsection II. Arcturus			
Grex I. Mesantherae			
Celsia arcturus (L.) BOUCHE .	24		„ „
„ *horizontalis* MOENCH. .	20		„ ,
„ *roripifolia* HAL.	21, possibly 20	42	„ „
„ *rupestris* DAVIDOFF . .	24		„ „
Grex II. Macrantherae .			
Celsia Battandieri MURB. . . .		46 or possibly 48	„ „
„ *bugulifolia* (LAM.) J. and Sp. [3]	17		„ „
„ *cretica* L.	26		„ „
„ *Faurei* MURB.	23		„ „
„ *lyrata* (LAM.) G DON. .	26		„ „
„ *maroccana* BALL. . . .	25		„ „
„ *pontica* BOISS.		34	„ „
Hybrids:			
Verbascum austricacum × *Celsia roripifolia* . .	$16+\frac{4_{I}}{2}$		„ „
„ *Blattaria* × *Celsia bugulifolia* . . .	$15+\frac{2_{I}}{2}$ [4]		„ „
„ *Blattaria* × *Celsia maroccana* . . .	$15+\frac{10_{I}}{2}$ [5]		„ „

[1]) Often only 17 chromosomes were seen.
[2]) The following species are classified under sections according to MÜRBECK (1925)
[3]) Various races had the same chromosome number.
[4]) Yet the author says there were nearly always 6 to 8 univalents.
[5]) In the embryo-sac-mother cells there were 9 bivalents and 13 univalents.

SCHROPHULARIACEAE (continued)	n	2n	
Verbascum (continued)			
Verbascum „densiflorum" (*V. phoeniceum* × *V. pyramidatum*) . .	16 [1])		HÅKANSON 1926*a*.
Calceolaria mexicana	30		SUGIURA, 1928*a*.
„ *pinnata*		50—52	HEITZ, 1926.
Nemesia affinis		(18)	„ 1927*b*.
„ *barbata*		(18)	„ „
„ *bicornis*		18	„ „
„ *compacta*		18	„ 1927*a*, 1927*b*.
„ *floribunda*		18	„ 1927*b*.
„ *foetens*		18	„ „
„ *hybrida*		18	„ 1927*a*, *b*.
„ *lilacina* . . .		18	„ 1927*b*.
„ *strumosa*	9	18	„ 1927*a*.
	9		„ 1927*b*.
„ *versicolor*		ca. 18	„ 1927*b*.
„ *spec.*		(18)	„ „
Cymbalaria hepaticifolia . . .	> 20		„ „
„ *muralis*		14	„ 1926, 1927*a*, *b*.
„ *pallida*		14	„ 1927*a*.
	7		„ 1927*b*.
Elatinoides commutata	14–16		„ „
„ *spuria*	14–16		„ „
Linaria alpina		12	„ „
„ *amethystea*		12	„ 1926, 1927*b*.
„ *anticaria*		12	„ 1926, 1927*b*.
„ *aparinoides*		12	„ „
„ *aquilens*		12	„ „
„ *arvensis*		12	„ „
„ *bipartita*		12	„ 1926, 1927*b*.
„ *Broussonnetti*		12	„ 1927*b*.
„ *capraria*		12	„ 1927*a*, *b*.
„ *chalepensis*		24	„ „ *b*.
„ *dalmatica*		12	„ 1926, 1927*b*.
	6		TJEBBES, 1928.
„ *delpinoides*		12	HEITZ, 1926, 1927*b*.
„ *genistifolia*		12	„ „ „
	6		TJEBBES, 1928.
„ *Hendersonii*		12	HEITZ, 1926, 1927*b*.
	6		TJEBBES, 1928.
„ *lineolata*		12	HEITZ, 1927*b*.
„ *macedonica*		12	„ 1926.

[1]) Either there were 16 bivalents, or 15 bivalents and 2 univalents, or 14 bivalents and 4 univalents.

SCROPHULARIACEAE (continued)	n	2n	
Linaria (continued)			
Linaria macroursa		12	HEITZ, 1926, 1927*b*.
„ *maroccana*	6		„ 1926, 1927*a*; TJEBBES, 1928.
„ *maroccana*		12	HEITZ, 1927*b*.
„ *melanantha*		12	„ 1926, 1927*b*.
„ *multipunctata*		12	„ „ „
„ *Pancicii*		12+4	„ 1927*b*.
„ *Perezii*		12	„ 1926, 1927*a*, *b*.
„ *purpurea*		12	„ 1926, 1927*b*.
„ *reflexa*		12	„ 1927*a*, *b*.
„ *repens*	6		TJEBBES, 1928.
„ *reticulata*		12	HEITZ, 1926, 1927*b*.
„ *saxatilis*		12	„ 1927*b*.
„ *Sibthorpiana*		(12)	„ „
„ *spartea*		12	„ „
„ *striata*		12	„ 1926, 1927*b*.
„ *supina*		12	„ 1927*b*.
„ *triornithophora*		12	„ 1926.
	6		„ 1927*b*.
„ *triphylla*		12	„ 1926, 1927*a*.
	6		„ 1927*b*.
„ *tristus*		12	„ 1926, 1927*b*
„ *versicolor*		(12)	„ 1927*b*.
„ *vulgaris*		12	„ 1926, 1927*b*
	6		TJEBBES, 1928.
Antirrhinum Asarina		16–20	HEITZ, 1926.
„ *Casabomela*		16	„ 1927*a*.
„ spec. *Casabomela*		16	„ 1927*b*.
„ *Cordoba*		16	„ „
„ spec. *Cordoba*	8		TISCHLER, 1920.
„ *glutinosum* (= *molle*)		16	HEITZ, 1927*b*.
„ *molle*	8		OSTENFELD, 1928.
„ *hispanicum*	8		TISCHLER, 1920.
„ *Huetii* (= *sempervirens*		16	HEITZ, 1927*a*.
„ *sempervirens*		16	„ 1927*b*.
„ *latifolium*	8		TISCHLER, 1921—22.
„ *majus*	8		TISCHLER, 1920; BAUR, 1924; OSTENFELD, 1928; SALESCU, 1925.
		16	HEITZ, 1926, 1927*b*.
	8	16	TISCHLER, 1921—22.

SCROPHULARIACEAE (continued)	n	2n	
Antirrhinum (continued)			
Antirrhinum majus	8 [1])	16 [2])	STEIN, 1926.
„ *majus* (LÖWENMAUL)	8 [3])	16 [4])	STEIN, 1927.
„ *majus* L. var. .	8		DE VILMORIN & SIMONET, 1927*b*
„ *orontium* . . .		16	HEITZ, 1926, 1927*b*.
„ spec. *Segovia* .		16	„ 1927*b*.
„ *siculum*		16	„ 1927*a*, *b*.
„ *tortuosum* . . .		16	„ 1927*a*, *b*.
Asarina procumbens		18	HEITZ, 1927*a*, *b*.
Chaenorrhinum littorale . . .		(14)	„ 1927*b*.
„ *organifolium*	7		„ 1927*a*, *b*
„ *viscidum* . . .		14	„ „ *b*.
Anarrhinum bellidifolium . .		18	„ 1927*b*.
„ *laxiflorum* . . .		18	„ 1927*a*, *b*.
Maurandia antirrhiniflora . .	12		„ 1927*a*.
		24	„ 1927*b*.
„ *Barclayana* . . .		24	„ „
„ *Emeryana*		24	„ „
„ *erubescens*		(24)	„ „
„ *Purpusi*		24	„ „
„ *scandens* (= *Lophospermum scandens* DON.).	12		„ 1927*a*.
„ *scandens*		24	„ 1927*b*.
Scrophularia vernalis	20		HÅKANSSON, 1926*b*.
Pentstemon confertus		ca. 16	HEITZ, 1927*b*.
„ *deustus*		16	„ „
„ *diffusus*	8		WINGE, 1925.
		14/16	HEITZ, 1927*b*.
„ *Hartwegii hybridus grandiflorus* . .	8		WINGE, 1925
„ *Hartwegii* BENTH. var. hort. *gloxinoides*	8		DE VILMORIN & SIMONET, 1927*b*
„ *heterophyllus* . . .		ca. 16	HEITZ, 1927*b*.
„ *isophyllus*	8		WINGE, 1925.
		ca. 16	HEITZ, 1927*b*.

[1]) A number of irregularities in the division of the chromosomes in the pollen mother cells were observed in plants treated by radium.

[2]) No irregularities in somatic divisions were found in radium-treated plants.

[3]) In some of the forms resulting from radium treatment (as SH. Pf 1. = schmalblättrigen Hornchenpflanzen and FD. Pfl. = Farb und Form defekten Pflanzen) non-disjunction caused 7—9 chromosomes to be seen in the daughter chromosomes.

[4]) No irregularities were found in the somatic divisions.

SCROPHULARIACEAE (continued)	n	2n	
Penstemon (continued)			
Penstemon unilateralis . . .		14–16	HEITZ, 1927*b*.
„ *venustus*		14–16	„ „
„ *Watsonii*		(14)–16	„ „
Limosella aquatica L.	18		SVENSSON, 1928.
VERONICA [1])			
Section Veronicastrum			
Veronica fruticans	8		HUBER, 1927.
„ *gentianoides*	24		„ „
„ *Gouani*	16(?) [2])		„ „
Section Alsinebe			
Veronica polita	7		„ „
„ *Tournefortii*	14	25–28	„ „
Section Pseudolysimachia			
Veronica longifolia		64–68	„ „
„ *spicata*	32(?)		„ „
Section Chamaedrys			
Veronica officinalis	+16(?)	32–37	HUBER, 1927.
„ *prostrata*	16		„ „
Section Beccabunga			
Veronica beccabunga	9	18	„ „
Section Leptandra			
Veronica virginica	17 [3])	ca. 33	„ „
Section Hebe			
Veronica diosmifolia	+12	24	„ „
Section (?)			
Veronica Andersoni HORT. . .	20		DE VILMORIN & SIMONET, 1927*b*
„ *arvensis*		16–(18)	HEITZ, 1926.
„ *azurea*		ca. 48	„ „
„ *opaca*		24–28	„ „
„ *speciosa* CUNN. var. *hort. Autumn Glory* .	20		DE VILMORIN & SIMONET, 1927*b*.
„ spec. var. *hort. Scarlet Gem*	20		DE VILMORIN & SIMONET, 1927*b*.
Digitalis ambigua	24	48	HAASE-BESSELL, 1921.
	28	56	HUSKINS, 1928*b*.
„ *ambigua* MURR. . . .	28	56	BUXTON & NEWTON, 1928.
„ *gloxiniaeflora*	12–13		WARREN, 1924.
„ *lanata*	24	48	HAASE-BESSEL, 1921.
„ *lutea*	48	96	„ „ 1916; 1921.

[1]) The following species are classified under sections according to ENGLER & PRANTL.
[2]) As many as 18 chromosomes were found.
[3]) 16 and 18 chromosomes were also found.

SCROPHULARIACEAE (continued)	n	2n	
VERONICA (continued)			
	8		WARREN, 1924.
	48		HAASE-BESSELL, 1926.
Digitalis micrantha	24	48	„ „ 1921.
	24		„ „ 1926.
„ *purpurea*	24	48	„ „ 1916; 1921.
	28	56	HUSKINS, 1928*b*.
„ *purpurea* L.	28	56	BUXTON & NEWTON, 1928.
„ *viridiflora*	28	56	HUSKINS, 1928*b*; BUXTON & NEWTON, 1928
„ *ambigua* × *D. purpurea*	56	112	HUSKINS, 1928*b*.
„ *lanata* × *D. lutea* . .	$\frac{72_1}{2}$		HAASE-BESSELL, 1921.
„ *lanata* × *D. micrantha*	24		„ „ „
„ *lutea* × *D. lanata* . .	$\frac{72_1}{2}$		„ „ „
„ *lutea* × *D. micrantha*	36		„ „ „ 1926.
„ *lutea* × *gloxiniaeflora*	10–11		WARREN, 1924.
(„ *lutea* × *gloxiniaeflora*) × *Digitalis gloxiniaeflora*	11–12		„ „
(„ *lutea* × *gloxiniaeflora*) × *Digitalis lutea* . .	8–9		„ „
„ *purpurea* × *D. ambigua*	24		HAASE-BESSELL, 1921.
„ *purpurea* × *ambigua* F_1	28 [1]	56	BUXTON & NEWTON, 1928.
„ *purpurea* × *ambigua* F_2 [2]		111–112[3]	„ „ „ „
„ *purpurea* × *ambigua* F_3		84	„ „ „ „
„ *purpurea* × *lutea* . .	$\frac{72_1}{2}$	72	HAASE-BESSELL, 1916.
Lathraea clandestina	21		GATES & LATTER, 1927.
„ *squamaria*	21		„ „ „ „
BIGNONIACEAE			
Bignonia venusta	ca. 25		DUGGAR, 1899.
Tecoma Tagliabuana VIS. . . .	20		DE VILMORIN & SIMONET, 1927*b*

[1]) The number of bivalents appearing in diakinesis was 5—12. The first meiotic division was extremely irregular, frequently all the chromosomes being drawn into a single „restitution" nucleus.
[2]) These hybrids resulted from artificial self-fertilization.
[3]) In one case there were only 102 chromosomes.
[4]) These hybrids resulted from natural pollination.

OROBANCHACEAE			
Orobanche minor.	19	38	CARTER, 1928.
GESNERIACEAE			
Ramondia nathaliae PANC. et PETR.	18		GLISIC, 1924 [1]).
„ *serbica* PANC. . . .	36		„ „
Monophyllaea Horsfieldii . . .	16	32	OELKERS, 1922.
Tydaea refulgens		24–28	HEITZ, 1926.
LENTIBULARIACEAE	n	2n	
Pinguicula caudata		44	HEITZ, 1926.
„ *vulgaris*		ca. 50	ROSENBERG, 1909*c*.
PLANTAGINALES			
PLANTAGINACEAE			
Plantago acantophylla		(10)–12)	HEITZ, 1927*b* [2]).
„ *albicans*		12	„ „
„ *alpina*		24	„ „
„ *amplexicaule*		10	„ „
„ *arenaria*		(12)	„ „
„ *aristata*		(20)	„ „
„ *Bellardii*		10	„ „
„ *camtschatica* (= *major*).		12	„ „
„ *Candollei*		(12)	„ „
„ *cornuti*		12	„ „
„ *coronopifolia*		(12)	„ „
„ *depressa*	12		EKSTRAND, 1918.
„ *indica* (= *pumila*?) .		12	HEITZ, 1927*b*.
„ *insularis*		(10)–12	„ „
„ *japonica*		12	SINOTO, 1925.
„ *Lagopus*		12	HEITZ, 1927*b*.
„ *lanceolata*		12	NĚMEC, 1910.
„ *lanceolata* L. [3]) . . .	6		TJEBBES, 1928.
„ *lusitanica*.		12	HEITZ, 1927*b*.
„ *maior*	6		EKSTRAND, 1918.
„ *major* L.	6 [4])?		LEVITSKY, 1928.
„ *major* var. *asiatica* .	ca. 12		(MIYAJI) given by ISHIKAWA, 1916.
	12	24	SINOTO, 1925.
„ *major* var. *asiatica* f.			

[1]) According to SCHÜRHOFF, 1926.
[2]) Though HEITZ gives the haploid numbers as half of the above numbers (diploid), I have chosen to give these, since his figures are all of somatic cells showing the diploid chromosome sets.
[3]) Though several forms were investigated, no variation was found.
[4]) By applying wound stimuli to the anthers of *Plantago major* L. in the stage of reduction division, the number of chromosomes was decreased in some cells and increased in others.

PLANTAGINACEAE (continued)	n	2n	
Plantago (continued)			
contracta		24	(MIYAJI) given by ISHIKAWA, 1916.
Plantago maritima	6	12	EKSTRAND, 1918.
„ *maxima*		12	HEITZ, 1927*b*.
„ *montana*		12	„ „
„ *ovata*		8	„ „
„ *palmata*		20–24	„ „
„ *psyllium*	6		EKSTRAND, 1918.
		(12–(14)	HEITZ, 1927*b*.
„ *saxatilis*		12	„ „
„ *Schwartzenbergiana* .		12	„ „
„ *sericea*		12–(14)	„ „
„ *sarraria*		10–(12)	„ „
„ *suffruticosa*		12	EKSTRAND, 1918.
„ *tibetica*		12	HEITZ, 1927*b*.
„ *virginica*		12	„ „
RUBIALES			
RUBIACEAE			
Houstonia caerulea.	16		STEVENS, 1912.
Coffea arabica.	8	16	VON FABER, 1912.
„ *liberica*.	8	16	„ „ „
Crucianella gilanica	10		LLOYD, 1902.
„ *macrostachya* . . .	10		„ „
Asperula cynanchia	12		„ „
CAPRIFOLIACEAE			
Sambucus nigra L.	18		VON BOENICKE, 1911.
„ *nigra*	18		KLEINMAN, 1923.
„ *nigra* var. *aurea* . .	18		WINGE, 1917.
„ *nigra* var. *linearis* .	18		„ „
„ *racemosa*	18		LAGERBERG, 1909.
„ *alseuosmoides* GRAEB.	18		DE VILMORIN & SIMONET, 1927*b*
„ *stabiana* GUSS. . . .	9		„ „ „ „ „
ADOXACEAE			
Adoxa moschatellina L..	18	36	LAGERBERG, 1909.
VALERIANACEAE			
Patrinia rupestris	11		ASPLUND, 1920.
VALERIANA [1])			
Section E x a l t a t a e			
Valeriana exaltata MIK. . . .		14 [2])	SENJANINOVA, 1927.
Section D u b i a e			
Valeriana rossica P. SMIRN.. .		28 [2])	SENJANINOVA, 1927.

[1]) These sections („Zyklus") are according to SMIRNOV, 1927.
[2]) Two chromosomes possessed satellites.

VALERIANACEAE (continued)	n	2n	
Section Sambucifoliae			
Valeriana excelsa POIR . .		56 [1])	SENJANINOVA, 1927
„ *Wolgensis* L KAZAKEWITSCH		28 [2])	„ „
Section (?)			
Valeriana dioica L	8 [3])		MEURMAN, 1925*a*, *b*
„ *montana*.	16		ASPLUND, 1920.
„ *officinalis* L. . . .	14		MEURMAN, 1925*a*, *b*.
„ *officinalis*	32 [4])		ASPLUND, 1920.
„ *officinalis* = *Valeriana salina* PLEIJEL .	28		MEURMAN, 1925*b*.
„ *phu*	24		ASPLUND, 1920.
„ *salina* PLEIJEL. . .	28		„ „
Centranthus macrosiphon . . .	16		„ „
DIPSACACEAE			
Morina longifolia		16	RISSE, 1928.
Cephalaria alpina	8		„ „
„ *ambrosoides*. . . .	8		„ „
„ *leucantha*	8		„ 1926, 1928.
„ *tatarica*	8		„ 1928.
„ *transsilvanica* . . .	8		„ „
Dipsacus fullonum	8		„ „
„ *laciniatus*	8		„ „
„ *silvester*	8		„ 1926, 1928.
Succisa australis.	8		„ „
„ *pratensis*	8		„ „
Knautia arvensis	8		„ „ 1928.
„ *atrorubens*	8		„ 1928.
„ *hybrida*.	8		„ „
„ *magnifica*.	8		CHIARUGI, 1927*c*.
„ *orientalis*	8		RISSE 1928.
„ *silvatica*	8		„ 1926, 1928.
„ *silvatica* var. *dipsacifolia*	24		CHIARUGI, 1927*c*.
Scabiosa acrania.		8	RISSE, 1926.
„ *atropurpurea*	8		„ „ 1928.
„ *caucasia*	8		„ 1928.
„ *Columbaria*	8		„ 1926, 1928.

[1]) Satellites could not be discovered.
[2]) Two chromosomes possessed satellites.
[3]) A pair of heterochromosomes was found: ♂n = 7 + x or 7 + Y.
[4]) MEURMAN (1925*b*) reexamined some of ASPLUND's material and found 28 to be the correct number. He considered it probable that of the two forms of *Valeriana officinalis* L. ASPLUND had fixed plants identical with the coastal form held by PLEIJEL (1925) to be an independent form *Valeriana salina* PLEIJEL.

DIPSACACEAE (continued)	n	2n	
Scabiosa (continued)			
Scabiosa daucoides	8		RISSE, 1926, 1928.
„ *gramuntia*	8		„ 1928.
„ *japonica*	8		TAHARA, 1915, given by ISHIKAWA 1916.
„ *maritima*	8		RISSE, 1926, 1928.
„ *micrantha*	8		„ „ „
„ *ochroleuca*	8		„ 1928.
„ *prolifera* (?)	8(?)		„ 1926.
	8		„ 1928.
„ *stellata*	8		„ 1926, 1928.
CUCURBITALES			
CUCURBITACEAE			
Bryonia alba L.	10		VON BOENICKE, 1911; MEURMAN, 1925*b*.
„ *dioica*	10		STRASBURGER, 1910*c*.
„ *dioica* JACQ.	12		MEURMAN, 1925*b*.
„ *alba* × *B. dioica*	12		TISCHLER, 1906.
Citrullus vulgaris L. [1]		22	KOZHUKHOW, 1925.
Cucumis maxima DUCH.		48	„ „
„ *melo* L. var. *reticulatus* ALEF.		24	„ „
„ *moschata* DUCH.		48	„ „
„ *pepo* L. var. *pomiformis* var. *aurantia* ALEF		40	„ „
„ *pepo* L. var. *gr. citrullina* ALEF.		42	„ „
„ *sativus* L. [2]		14	„ „
„ *sativus* L. [3]	7	14	HEIMLICH, 1927.
„ *sativus* L. var. *Selenka*		14 [4]	KOSHUCHOW, 1927, 1928.
Trichosanthes japonica REGEL	11 [5]		SINOTO, 1928*a*.
Cucurbita maxima	20		CASTETTER, 1926.
„ *pepo* [6]	14		LUNDEGARDH, 1914*b*.
Micrampelis lobata (MICHX.) GREENE	16		KIRKWOOD, 1907.
CAMPANULACEAE			
Symphyandra Hofmanni PANT.	17		DEVILMORIN & SIMONET, 1927*b*.

[1] Cells showing 44 chromosomes (syndiploid) were found.
[2] „Syndiploid" cells with 28 chromosomes, arranged in pairs, were found.
[3] This was a white-spined variety.
[4] Tetraploid and octoploid numbers were found as a result of treatment of seedlings by higher and lower temperatures than the optimal for germination.
[5] A pair of unequal chromosomes was distinguishable.
[6] FLACH (1924) found 27—32 prochromosomes in *Cucurbita pepo*.

CAMPANULACEAE (continued)	n	2n	
Campanula isophylla MORETTI.	16		DEVILMORIN & SIMONET, 1927*b*
„ *latifolia* L. var. *grandiflora* HORT.	17		„ „ „ „
„ *longistyla* FOMINE .	17		„ „ „ „
„ *nitida*	8	16	GAIRDNER, 1926.
„ *persicifolia*. . . .	8		MARCHAL, 1920.
	8	16	GAIRDNER, 1926.
„ *persicifolia* („*Telham Beauty*") . .	16	32	„ „
„ *punctata* LAM. . .	17		DEVILMORIN & SIMONET, 1927*b*.
„ *pyraversi* HORT. CAYEUX.	17		„ „ „ „
„ *rapunculoides* L. var. *grandiflora* HORT.	51		„ „ „ „
„ *Van Houttei* CARR.	17		„ „ „ „
„ *nitida* × *C. persicifolia* („*Telham Beauty*")		24	GAIRDNER, 1926.
„ *persicifolia* „*Telham Beauty*" × *C. nitida*		24 [1])	„ „
„ *persicifolia* „*Telham Beauty* × *C. persicifolia* . . .		24–25 [2])	
Phyteuma spicata	18		ARMAND, 1912.
Lobelia cardinalis L.	7		DEVILMORIN & SIMONET, 1927*b*.
„ *cliffortiana* L.	7		„ „ „ „
„ *Dortmanna*.	8		ARMAND, 1912.
„ *Erinus*	8		„ „
„ *Erinus* L. HORT. . . .	14		DEVILMORIN & SIMONET, 1927*b*.
„ *Erinus* L. var. *Crystal-Palace* HORT.	21		„ „ „ „
„ *Erinus* L. var. *Lindleyana* HORT.	14		„ „ „ „
„ *Erinus* L var *saphir pendula* HORT . .	21		„ „ „ „
„ *Erinus* L var *speciosa grandiflora* HORT. . .	21		„ „ „ „
„ *Erinus* L. var. *superba* HORT.	21		„ „ „ „
„ *syphilitica* L.	7		„ „ „ „
„ *Tupa* L.	21		„ „ „ „

[1]) Two other plants had (28—30)? and (16)? chromosomes, respectively.
[2]) One plant had 32 chromosomes.

CAMPANULACEAE (continued)	n	2n	
Lobelia (continued)			
Lobelia urens	8		ARMAND, 1912.
„ *urens* L..	7		DEVILMORIN & SIMONET, 1927*b*.
CALYCERACEAE			
Acicarpha tribuloides JUSS. .	ca. 8		DAHLGREN, 1915.
COMPOSITAE			
Ageratum conyzoides	10		ISHIKAWA, 1911*b*, 1916.
Eupatorium ageratoides . . .	17		HOLMGREN, 1919.
„ *cannabinum* . . .	10		„ „
„ *glandulosum* . . .	$\frac{51}{2}$	51	„ „
„ *ianthinum*	10		„ „
„ *petiolatum*	ca. 17		„ „
„ *Purpusi*	17		„ „
Grindelia squarrosa	6	12	HOWE, 1926.
Solidago canadensis	9		CARANO, 1921.
„ *Riddelii*	18		„ „
Bellis perennis	9		ISHIKAWA, 1911*b*, 1916; WINGE, 1917.
		18	HEITZ, 1926.
Asteromoea indica	9		TAHARA & SHIMOTOMAI, 1926.
„ *indica* var. *Pinnatifidus*	9		„ „ „ „
„ *Savatieri*	9		„ „ „ „
Callistephus chinensis	9		„ „ „ „
Aster fastigistus	9		„ „ „ „
„ *Glehni*	9		„ „ „ „
„ *novae angliac.*	5		CARANO, 1921.
„ *scaber*.	9		TAHARA & SHIMOTOMAI, 1926.
„ *tartaricus*	27		„ „ „ „
„ *trinervius* var. *adustus*. .	18		„ „ „ „
„ *trinervius* var. *genuinus* .	18		„ „ „ „
„ *Tripolium*	9		„ „ „ „
„ *viscidulus*	9		„ „ „ „
Melitella pusilla	4		CHIARUGI, 1926*b*.
„ *pusilla* SOMM. . . .	5		„ 1927*a*.
Erigeron alpinus L.	9		„ 1926*b*, 1927*a*.
„ *annus* PERS.	13	26	TAHARA, 1915*d*.
„ *annuus* PERS..		26 [1]	„ 1921.
„ cfr. *annuus*.	$\frac{4+19_I}{2}$	27	HOLMGREN, 1919.
„ *bonariensis*	27		HOLMGREN, 1919.
„ *dubius* MAKINO . . .	9		TAHARA, 1921.

[1]) In the endosperm cells 52 chromosomes were found.

COMPOSITAE	n	2n	
Erigeron (continued)			
Erigeron dubius var. *glabrata* .	9		(TAHARA, 1916), given by ISHIKAWA, 1916.
„ *eriocephalus*.	9		HOLMGREN, 1919.
„ *glabellus*	9		„ „ CARANO 1921
„ *Karvinskianus* var. *mucronatus*	14–18	32–34	CARANO, 1921.
	ca. 16	32–34	„ 1924.
„ *linifolius*	probably 27		HOLMGREN, 1919.
„ *linifolius* WILD. . . .	26	ca. 52	TAHARA, 1921.
„ *macranthus*	13–15		HOLMGREN, 1919.
„ *politus*	9		„ „
„ *unalaschkensis* . . .	18		„ „
Antennaria alpina		48–52	JUEL, 1900*a*.
„ *dioica*	12–14	24–28	„ „
	13		HOLMGREN, 1919.
Silphium integrifolium MICHX.	8		MERRELL, 1900.
		ca. 16	LAND, 1900.
„ *laciniatum* L. . . .		ca. 16	„ „
„ *perfoliatum* L. . . .		14	TAYLOR, 1926.
„ *terebinthinaceum* L. .		ca. 16	LAND, 1900.
Xanthium inflexum	18		SYMONS, 1926.
„ *italicum*.	18		„ „
„ *pennsylvanicum* . .	18		„ „
„ *strumarium*	18		ISHIKAWA, 1916.
„ *inflexum* × *X. italicum*	18		SYMONS, 1926
Zinnia elegans.	12		ISHIKAWA, 1911*b*, 1916.
Wedelia prostrata	15		„ 1916.
Helianthus annuus L.	16(?)		VON BOENICKE, 1911.
„ *annuus*.		34	TAHARA, 1915*a*.
		34 [1]	PROZINA, 1925.
Dahlia coronata „*Coronata*" . .	16		ISHIKAWA, 1911*a*.
„ *coronata*	16		„ 1911*b*.
		32	„ 1916.
„ *gracilis* (?) „*Camelia*" .	32		„ 1911*a*.
„ *imperialis*	16		BELLING, 1925*d*.
„ *juarezii* „*Juarezii*" . .	32		ISHIKAWA, 1911*a*.
„ (?) „*Citronen Vogel*" .	32		„ „
„ (?) „*Collerette*"	32		„ „
„ (?) „*Gloria*"	32		„ „
„ (?) „*Hanza*"	32		„ „

[1]) One pair of chromosomes was provided with small satellites.

COMPOSITAE (continued)	n	2n	
Dahlia (continued)			
Dahlia (?) „*Leopold*"	32		ISHIKAWA, 1911*a*.
„ (?) „*Oertel*"	32		„ „
„ (some single dahlias) . .	32		„ „
„ (vars.)	32		„ 1911*b*.
„ (vars.) (believed to be from *D. variabilis* and *D. coccinea*	32		„ 1916.
Hemizonia congesta subspecies *lutescens*	12	24	BABCOCK & HALL, 1924.
„ *congesta* subspecies *luzulaefolia* . . .	12	24	„ „ „ „
„ *congesta* subspecies *typica*	12	24	„ „ „ „
„ *corymbosa* (D.C.) T. & G.	10	20	„ „ „ „
Anthemis alpina L.	9		CHIARUGI, 1926*b*, 1279*a*.
„ *tinctoria*	9		LUNDEGARDH, 1909; HOLMGREN, 1915.
Anacyclus pyrethrum DC. . .		18	RAVES, 1926.
Achillea Clavenae	9		CHIARUGI, 1927*a*.
„ *millefolium*	ca. 24		LUNDEGARDH, 1909.
Matricaria ambigua	9		(TAHARA 1916) given by ISHIKAWA, 1916.
„ *ambigua* LEDEB. .	9		TAHARA, 1921.
„ *chamomilla*	9		LUNDEGARDH, 1909; BEER, 1912.
Chrysanthemum alpinum L. . .	18		CHIARUGI, 1926*b*.
	18	36	„ 1927*a*, 1927*b*.
„ *arcticum* . . .	45		TAHARA, 1915*b*.
„ *arcticum* L. . .	45		„ 1915*c*, 1921.
„ *carinatum* . .	9		„ 1914, 1915*b*.
„ *carinatum* SCHOUB. . .	9		„ 1915*c*, 1921.
„ *cinerariifolium* BROCC. . .	9		„ 1921
„ *coronarium* . .	9		„ 1914, 1915*b*.
„ *coronarium* L.	9		„ 1915*c*, 1921.
„ *Decaisneanum*	36		„ 1915*b*.
„ *Decaisneanum* MATSUM. . .	36(?)		„ 1915*c*.
	36		„ 1921.
hakusanense .	27		(TAHARA 1916), given by ISHIKAWA, 1916.

COMPOSITAE (continued)	n	2n	
Chrysnthemum (continued)			
Chrysanthemum hakusanense MAK.	27		TAHARA, 1921.
„ *indicum* . . .	18		(TAHARA 1916) given by ISHIKAWA, 1916.
„ *indicum* L. . .	18		TAHARA, 1921
„ *japonicum* . .	9		„ 1914, 1915*b*.
„ *japonicum* MAK. . . .	9		TAHARA, 1915*c*, 1921.
„ *lavandulaefolium*	9		„ 1914, 1915*b*; TAHARA & SHIMOTOMAI, 1927.
„ *lavandulaefolium* MAK. . .	9		TAHARA, 1915*c*, 1921.
„ *Leucanthemum*	18		„ 1915*b*.
„ *Leucanthemum* L.	18		„ 1915*c*, 1921.
„ *lineare*	9		(„ 1916) given by ISHIKAWA, 1916.
„ *lineare* MATSUM.	9		TAHARA, 1921.
„ *marginatum* .	45		(TAHARA, 1916) given by ISHIKAWA, 1916, TAHARA & SHIMOTOMAI, 1927.
„ *marginatum* MIQ.	45		TAHARA, 1921.
„ *Marchalii* ASCHERS. . .	9		TAHARA, 1915*c*.
„ *Marschallii*. .	9		„ 1915*b*.
„ *morifolium* . .	27		„ „
„ *morifolium* RAM. . . .	27		„ 1915*c*, 1921.
„ *myconis* . . .	9		(TAHARA 1916) given by ISHIKAWA, 1916.
„ *myconis* L. . .	9		TAHARA, 1921.
„ *nipponicum* .	9		„ 1914, 1915*b*.
„ *nipponicum* FRANCH. . .	9		„ 1915*c*, 1921.
„ *roseum* . . .	9		„ 1914.
„ *roseum* WEBB. et MOHR. .	9		„ 1921.
„ *segetum* . . .	9		(TAHARA 1916) given by ISHIKAWA, 1916.
„ *segetum* L. . .	9		TAHARA, 1921.

COMPOSITAE (continued)	n	2n	
Chrysanthemum (continued)			
Chrysanthemum hybridum HORT. *Jap.*	27		TAHARA, 1921.
„ *hybridum* „*Shasta* Daisy"	$\frac{45+40_1}{2}$		„ „
„ *marginatum* × *C. lavandulaefolium* . . .	36	72	TAHARA & SHIMOTOMAI, 1927
Tanacetum vulgaro	9		ROSENBERG, 1905.
Centipeda orbicularis	10		ISHIKAWA, 1911*b*, 1916.
Artemisia absinthium	9		WEINEDL-LIEBAU, 1928.
„ *annua*	9		„ „ „
„ *campestris*	9		„ „ „
„ *cina*	9		„ „ „
„ *dracunculus*	9		„ „ „
„ *maritima*	9		„ „ „
„ *nitida* BERTOL. . .		27	CHIARUGI, 1926*a*.
„ *pontica*	9		WEINEDL-LIEBAU, 1928.
„ *vulgaris*	9		„ „ „
Senecio nikoensis	10		ISHIKAWA, 1916.
Ligularia tussilaginea	30		MIYAJI, 1913.
„ *tussilaginea* var. *crispata*	30, 31		„ „
Calendula officinalis		24	LUNDEGARDH, 1909.
„ spec.	16	32	ROSENBERG, 190-*b*.
Echinops sphaerocephalus L. .	16		PODDUBNAJA, 1927.
Carduus crispus L.	8		„ „
Saussurea affinis	18		ISKIKAWA, 1911*b*, 1916.
Centaurea cyanus L.	12		PODDUBNAJA, 1927.
Lampsana apogonoides	22		ISHIKAWA, 1911*b*, 1916.
„ *humilis*	8		ISKIHAWA, 1916.
Picris hieracioides	5		ISHIKAWA, 1911*b*, 1916
Helminthia echioides	4		MARCHAL, 1920.
CREPIS [1])			
Section Anisoderis CASS.			
Crepis alpina	4		MARCHAL, 1920.
		10	ROSENBERG, 1920; MANN, 1922; NAWASCHIN, M., 1925*a* 1927*a*, *d*, *e*.
„ *alpina* L.	5	10	MANN, 1925.
	5		BABCOCK & LESLEY, 1926.

[1]) The arrangement under sections is as BABCOCK & LESLEY (1926) have rearranged that of HOFFMANN in ENGLER and PRANTL.

COMPOSITATE (continued)	n	2n	
Crepis (continued)			
Crepis foetida	4	8	ROSENBERG, 1918.
	4		MARCHAL, 1920.
		10	MANN, 1922.
	5		LESLEY, M. 1925.
„ *foetida* L.	5		BABCOCK & LESLEY, 1926.
„ *rubra*	5	10	ROSENBERG, 1918.
	4		MARCHAL. 1920.
		10	MANN, 1922; NAWASCHIN, M., 1925*a*.
„ *rubra* L.	5		BABCOCK & LESLEY, 1926.
Section Barkhausia MNCH.			
Crepis bursifolia		8	MANN, 1922.
„ *bursifolia* L.	4	8	„ „ 1925.
	4		BABCOCK & LESLEY, 1926.
„ *setosa*		8	MANN, 1922.
„ *setosa* HALL.		8	TAYLOR, 1925*c*.
	4	8	MANN, 1925.
	4		COLLINS & MANN, 1923; LESLEY & HALL, 1926.
„ *taraxacifolia*	6	12	BEER, 1912.
	4	8	DIGBY, 1914.
		8	MANN, 1922.
„ *taraxacifolia* THUILL. .	4	8	„ 1925.
	4		BABCOCK & LESLEY, 1926.
Section Nemauchenes CASS.			
Crepsis aspera	4		MARCHAL, 1920.
		8	MANN, 1922; NAWASCHIN, M., 1927*c*.
„ *aspera* L.	4	8	MANN, 1925.
	4		BABCOCK & LESLEY, 1926.
„ *amplexifolia*		8	MANN, 1922.
„ *amplexifolia* WILLK. . .	4	8	„ 1925.
„ *amplexifolia* (GODR.) WILLK.	4		BABCOCK & LESLEY, 1926.
Section Gaytonia, Cymboseris BOISS. & Phaecasium BOISS.			
Crepis dioscoridis	4		MARCHAL, 1920.
		8	MANN, 1922.
„ *dioscoridis* L.	4	8	„ 1925.
		8 [1]	NAWASCHIN, M., 1925*a*, 1926.
	4		BABCOCK & LESLEY, 1926.

[1]) One pair of chromosomes (D) had satellites (NAWASCHIN, M., 1926).

COMPOSITAE (continued)	n	2n	
Crepis (continued)			
„ *palaestina* Boiss. . . .	4	8	Mann, 1925.
„ *palaestina* (Bornm.) . .	4		Babcock & Lesley, 1926.
„ *pulchra*	4	8	Rosenberg, 1918.
		8	Rosenberg, 1920; Mann, 1922
„ *pulchra* L.	4	8	Mann, 1925.
	4		Babcock & Lesley, 1926.
Section Eucrepis D.C.			
Crepis virens	3	6	Rosenberg, 1909*a*, 1918; Beer 1912; Digby, 1914; Marchal, 1920.
		6	Grégoire, 1912.
	3		de Smet, 1914.
„ *virens* L.		6	de Litardière, 1923*a*; Nawaschin, M., 1925*a*.
„ *virens* f. *agrestis* W. K. .	3		Dahlgren, 1920.
„ *capillaris*		6 [1]	Babcock & Collins, 1920*a*; Mann, 1922; Nawaschin, S., 1926; Nawaschin, M., 1927*c*.
		3 [2]	Hollingshead, 1928*b*.
„ *capillaris* L(.) Wallr. .		9, 15 [3]	Nawaschin, M., 1925*b*.
		6, 7, 9, 15 [4]	„ „ 1926.
		6	Taylor, 1925*c*, 1926.
	3		Babcock & Collins, 1920*b*; Collins & Mann, 1923; Babcock & Lesley, 1926.
„ *neglecta*	4	8	Rosenberg, 1918.
		8	Mann, 1922.
„ *neglecta* L.	4	8	„ 1925.
	4		Babcock, & Lesley, 1926.
„ *parviflora*	4	8	Rosenberg, 1918.
		8	Mann, 1922; Nawaschin, M., 1925*a*.
„ *parviflora* Desf. . . .	4	8	Mann, 1925.
	4		Babcock & Lesley, 1926.

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[1]) In 112 metaphases in root-tip cells, out of 768 examined, S. Nawaschin (1926) found association of homologous chromosomes.

[2]) Two haploid plants appeared in F_1 of *C. capillaris* × *C. tectorum* after being subjected to low temperature. In the roots of one, diploid plates were found.

[3]) Two mutants, one triploid (2n = 9), and one pentaploid (2n = 15), were found.

[4]) Of 2,000 plants examined, 11 had 3n, one had 5n, and one had 2n + 1 chromosomes. One cell of a root-tip had 128n (> 500) chromosomes. Also a tetraploid sector was found in a diploid root. In diploid cells, one pair of chromosomes (D) had satellites.

COMPOSITAE (continued)	n	2n	
Crepis (continued)			
Crepis tectorum	4	8	JUEL, 1905.
		8 [1])	ROSENBERG, 1920; MANN 1922; NAWASCHIN, M., 1925*a*, 1927*a*, *d*; NAWASCHIN, S., 1926.
„ *tectorum* L.	4	8	MANN, 1925.
	4		BABCOCK & COLLINS, 1920*b*; BABCOCK & LESLEY, 1926.
		8	BABCOCK & COLLINS, 1920*a*; NAWASCHIN, M., 1927*e*.
		8, 8+12, 16 [2])	NAWASCHIN, M., 1926.
„ *biennis*	20		ROSENBERG, 1918; MANN, 1922; LESLEY, 1925.
	21		ROSENBERG, 1920.
	16		MARCHAL, 1920.
„ *biennis* L.	20	40	MANN, 1925
	20		COLLINS & MANN, 1923; BABCOCK & LESLEY, 1926.
„ *Blavii* ASCH.	4		BABCOCK & LESLEY, 1926.
„ *chondrilloides* JACQ.	4		„ „ „ „
„ *ciliata* C. KOCH	20		„ „ „ „
„ *lyrata* FROEL.	6		„ „ „ „
„ *mollis* (JACQ.) ASCH.	6		„ „ „ „
„ *montana*		10	MANN, 1922.
	6	12 & 24	HOLLINGSHEAD, 1928*a*.
„ *montana* D'URV.	6		BABCOCK & LESLEY, 1926.
„ *pygmaea* L.	6		„ „ „ „
„ *Sieberi* BOISS. [3])	6	12	MANN 1925.
Section Y o u n g i a CASS.			
Crepis fusicappa (THW.) BENTH.	8		BABCOCK & LESLEY, 1926
„ *japonica* BENTH	8		TAHARA, 1910.
„ *japonica* (L.) BENTH.	8	16	MANN, 1925.
	8		BABCOCK & LESLEY, 1926.

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[1]) In 5 metaphases in root-tip cells, out of 257 examined, S. NAWASCHIN (1926) found association of homologous chromosomes.

[2]) Of 4,000 plants examined, 16 had 3n, 5 had 4n, a few (18 in all) had 1, 2 or 3 extra chromosomes. One plant showed a cell in the root-tip with 128n (> 500) chromosomes. In diploid cells, one pair of chromosomes (D) had satellites. In 3 cases a new (n) chromosome unlike any of the 2n complex appeared.

[3]) According to BABCOCK & LESLEY (1926), for *Crepis Sieberi* BOISS. read *C. montana* D'URVILLE.

COMPOSITAE (continued)	n	2n	
Section Aetheorrhiza CASS.			
Crepis bulbosa		18	MANN, 1922.
„ *bulbosa* (L.) TAUSCH. .	9	18	„ 1925.
	9		BABCOCK & LESLEY, 1926.
Section Omalocline . . .			
Crepis aurea (L.) REICHB. . .	5	10	MANN, 1925.
	5		BABCOCK & LESLEY, 1926.
„ *Hookeriana* BALL. . . .	4		„ „ „ „
Section Soyeria .			
Crepis blattaroides		8	ROSENBERG, 1920.
	4		MARCHAL, 1920.
„ *blattaroides* VILL. . . .	4	8	MANN, 1925.
	4		BABCOCK & LESLEY, 1926.
„ *grandiflora*		8	MANN, 1922; NAWASCHIN, M., 1925*a*.
„ *grandiflora* TAUSCH. . .	4	8	MANN, 1925.
„ *grandiflora* TAUSCH. [1]) . = *Crepis conyzaefolia* (GOUAN) DALLA TORRE	4		BABCOCK & LESLEY, 1926.
„ *paludosa* (L.) MNCH. . .	6		„ „ „ „
„ *sibirica*	4		MARCHAL, 1920.
„ *sibirica* L.	5	10	MANN, 1925.
	5		BABCOCK & LESLEY 1926.
„ *tingitana* SAIZ et BALL.	5		„ „ „ „
Section (?) [2])			
Crepis agrestis	4		ROSENBERG, 1918.
		8	„ 1920.
„ *amplexicaule*		8	„ „
„ *barbata*	9		„ 1918.
„ *Burenania*		8 & 16	HOLLINGHSEAD, 1928*a*.
„ *dichotoma*	3		ROSENBERG, 1918.
„ *Hakelei*		16 & ca. 32	HOLLINGSHEAD, 1928*a*.
„ *Jacquinii*		42	ROSENBERG, 1920.
„ *multicaulis*	5		„ 1918.
„ *nicaensis*	4		„ „
		8	„ 1920.
„ *polymorpha* var. *stricta* .	3		„ 1918.
„ *Reuteriana*	3		„ „
„ *Reuteriana gigas* . . .		12	„ 1920.
„ *rigida*	5		„ 1918.
„ *virens gigas*		12	„ 1920.

[1]) According to BABCOCK & LESLEY (1926), for *C. grandiflora* TAUSCH read *C. conyzaefolia* (GOUAN) DALLA TORRE.

[2]) The following species were not arranged according to sections.

COMPOSITAE (continued)	n	2n	
Crepis Hybrids:			
Crepis biennis × *C. foetida* . .		25 & ca.50[1])	LESLEY, M. M., 1925.
„ *biennis* × *C. setosa* . .		24 & 48	HOLLINGSHEAD, 1928*a*.
„ *biennis* × (*C. setosa* × *C. biennis* F_2)	ca. 15	32	MANN, 1922.
„ *capillaris* × *C. aspera* F_1	$\frac{7}{2}$ [2])	7 [3])	NAWASCHIN, M., 1927*b, c*.
„ *capillaris* × *C. aspera* F_2 [4])	$\frac{3+4_1}{2}$	10 [5])	NAWASCHIN, M., 1927*b*.
„ *capillaris* × *C. aspera* F_2		11 [6])	„ „ „
„ *capillaris* × *C. aspera* F_2 (*capillaris* like) . .		10 [7])	„ „ 1927*c*.
„ *capillaris* × *C. aspera* F_2 (*aspera* like) . . .		7, 11 [8]), 12 [9])	„ „ „
„ *capillaris* × *C. aspera* F_2 (*setosa* like)		11 [10])	„ „ „
„ *capillaris* × *C. parviflora* [4])		7 [3]), [11])	„ „ 1927*b, c*.
„ *capillaris* × *C. rubra* [4]).		9	„ „ „
„ *capillaris* × *C. rubra* .		10 [12])	„ „ 1927*c*.
„ *capillaris* × *C. tectorum*		7 [3]), [11])	BABCOCK & COLLINS, 1920*a, b*; NAWASCHIN, M., 1927*c*.
		10	„ „ 1927*b*.

[1]) In a few cells of the root of an F_1 of this hybrid, about twice 25 chromosomes were found, whereas most of the cells contained 25.

[2]) Examination of 3 fertile plants by M. NAWASCHIN (1927*c*) showed variation in the way these 7 chromosomes were distributed to the 2 poles; either by random distribution, as of 7 univalents, or by division of all 7 chromosomes; or by an intermediate condition of these 2 types.

[3]) These hybrids possessed the haploid sets of both parents (M. NAWASCHIN, 1927*c*).

[4]) In these hybrids the chromosomes showed that they had undergone morphological changes (M. NAWASCHIN, 1927*b*).

[5]) A haploid set of *C. aspera* and a diploid set of *C. capillaris* made up this number.

[6]) A diploid set of *C. aspera* and a haploid set of *C. capillaris* made up this number.

[7]) Two such plants had a diploid set of *C. capillaris* and a haploid set of *C. aspera* chromosomes. Division was regular with 3 gemini (the *C. capillaris* chromosomes) and 4 univalents (the *C. aspera* chromosomes) in diakinesis. These F_2 plants were characterized by a change in one of the „A" chromosomes.

[8]) Four plants had a diploid set of *C. aspera* and a haploid set of *C. Capillaris* chromosomes.

[9]) One plant had a diploid set of *C. aspera* and a haploid set of *C. capillaris* + 1 extra chromosome. This plant was abnormal and weak.

[10]) These plants contained the haploid chromosome sets of *C. capillaris*, *C. aspera* and *C. setosa*.

[11]) In 3 hybrids M. NAWASCHIN (1927*c*) states that there was a change from the chromosome complex of the 2 parents, as seen in the loss of the trabant of the „D" chromosome and in the change in the arm of the „A" chromosome.

[3]) This hybrid possessed a diploid set of *C. capillaris* and a haploid set of *C. rubra*.

COMPOSITAE (continued)	n	2n	
Crepis (continued)			
Crepis capillaris × *C. tectorum* F_2 [1])		11 [2])	NAWASCHIN, M., 1927*b*, *c*.
„ *foetida* × *C. rubra* . .		9 [3])	„ „ 1927*c*.
„ *setosa* × (*C. setosa* HALL × *C. capillaris* (L.) WALLR. F_1		7, 8, 10	MANN, 1922.
„ *setosa* × *C. biennis* F_2 .		25	„ „
„ *setosa* × (*C. setosa* × *C. biennis* F_2)		17, 18	MANN, 1922.
„ *tectorum* L. ♀ × *C. alpina* ♂		10 [4])	NAWASCHIN, M., 1927*a*, *d*, *e*.
Hieracium alpinum	$\frac{27_I}{2}$		ROSENBERG, 1926.
		27	„ 1927*a*.
„ *asperulum*		27	„ „
„ *auricula*	7–9		„ 1907*b*.
	9	18	„ 1917.
„ *auricula* (LYON) . .	$9+\frac{18}{2}$		„ „
„ *aurantiacum* . . .	ca. 18	ca. 36	„ „
„ *balcanum*		36	„ 1927*a*.
„ *bifidum*		18	„ „
„ *boreale*	$9\text{-}10+\frac{11_I}{2}\text{-}\frac{27_I}{2}$	27	„ „
„ *boreale forma* . . .	$10+\frac{15_I}{2}$	36	„ „
„ *Bornmulleri* . . .		27	„ „
„ *excellens*	18	42	„ 1917.
„ *flagellare*	21		„ 1907*a*.
„ *hirsutum*		36	„ 1927*a*.
„ *intybaceum*	$\frac{27_I}{2}$		„ „
„ *lacerum*		27	„ 1917, 1927*a*.

[1]) In these hybrids the chromosomes showed that they had undergone morphological changes (M. NAWASCHIN, 1927*b*).

[2]) One plant was obtained which showed a diploid set of *C. tectorum* and a haploid. set of *C. capillaris*. The „D" chromosomes in this F_2 plant also lacked the satellites but had „a small head" instead (M. NAWASCHIN, 1927*c*).

[3]) In 3 hybrids M. NAWASCHIN (1927*c*) states that there was a change from the chromosome complex of the 2 parents, as seen in the loss of the trabant of the „D" chromosome and in the change in the arm of the „A" chromosome.

[4]) Cytological investigation of one alpina-like plant of the hybrid progeny showed 10 chromosones quite like *C. alpina*. NAWASCHIN considered this a case of merogony (nucleus contributed by ♂ parent and protoplasm by ♀ parent).

COMPOSITAE (continued)	n	2n		
Hieracium (continued)				
Hieracium laevigatum		27	ROSENBERG,	1917.
	$\frac{17_1}{2}$		„	1927*a*.
„ *Pilosella*	18	36	„	1917.
„ *pseudoillyricum* . .		27	„	„
pseudoillyricum . .	$\frac{27_1}{2}$	27	„	1927*a*.
„ *pulmonarioides* . .	$\frac{27_1}{2}$		„	1926.
		36	„	1927*a*.
„ *sabaudum*		27	„	„
„ *silvestre*		27	„	1917.
„ *speciosum*		27	„	1927*a*.
„ *transsylvanicum* . .		18	„	„
„ *tridentatum* . . .		27	„	„
„ *umbellatum*	9	18	JUEL, 1905.	
		18	ROSENBERG,	1927*a*.
		27	„	„
	$\frac{27}{2}$ & $\frac{54}{2}$[1])		„	1927*b*.
„ *umbellatum* var. *linearifolium* . . .		27	„	1917.
„ *venosum*	7		„	1907*a*, *b*.
„ *virgaurea*		18	„	1927*a*.
„ *virosum*		36	„	„
„ (diverse forms) . .		18	GRÉGOIRE, 1912.	
Leontodon autumnalis	6		MARCHAL, 1920.	
		12	NAWASCHIN, M., 1916.	
„ *autumnalis* L. . . .	6		MEYER, K., 1925.	
Chondrilla juncea	$\frac{14\text{–}16}{2}$		ROSENBERG, 1912.	
Taraxacum albidum DAHLST. .		36–40	OSAWA, 1913*a*.	
„ *confertum*	8		ROSENBERG, 1909*b*.	
„ *erythrospermum* ANDRZ.		26–30	STORK, 1920.	
„ *officinale*		26	GRÉGOIRE, 1912.	
	12–13	ca. 24[2])	JUEL, 1905.	
		22–(24)	HEITZ, 1926.	
„ *platycarpum* DAHLST.	8		OSAWA, 1913*a*.	
Lactuca dentata var *Thunbergii*	11–12		ISHIKAWA, 1921	

[1]) A few restitution nuclei containing 54 chromosomes were found in this parthenogenetic species.
[2]) Occasionally 22 and 26 chromosomes were counted.

COMPOSITAE (continued)	n	2n	
Lactuca (continued)			
Lactuca lanceolata	5		ISHIKAWA, 1916, 1921.
„ *lanceolata* var. *platyphylla*	5		TAHARA & ISHIKAWA, 1911; TAKAMINE, 1923.
„ *lanceolata* var. *platyphylla* (FRANCH et SAV.) MAKINO . . .	5		TAKAMINE, 1916.
„ *lanceolata platyphylla* .	5		ISHIKAWA, 1921.
„ *muralis*	9		GATES & REES, 1921.
„ *sativa*	9		GATES, 1920.
„ *scariola*	9		GATES & REES, 1921.
„ *scariola* var. *sativa* . .	9		ISHIKAWA, 1921.
„ *Thunbergiana*	11–12		TAHARA & ISHIKAWA, 1911; ISHIKAWA, 1916.
Picridium hispanicum		16	BORGENSTAM, 1922.
Sonchus oleraceus	16 [1]		ISHIKAWA, 1911*b*, 1916.
	8		MARCHAL, 1920.
Tragopogon porrifolius	6		WINGE, 1927*b*.
„ *pratensis*	6		BEER, 1912; WINGE, 1927*b*.
	7		ISHIKAWA, 1916.
„ *pratensis* × *porrifolius* F_1 . . .		12	WINGE ,1927*b*.
„ *pratensis* × *porrifolius* F_2		12, 24 [2]	SKOWROWN given by WINGE 1927*b*.

MONOCOTYLEDONEAE

PANDANALES

TYPHACEAE

	n	2n	
Typha angustifolia	ca. 15 [3]		ROSCOE, 1927*c*.
„ *angustifolia* var. *Muelleri* GRAEB.	30		„ „
„ *angustifolia hybrid*. . .	ca. 15 [4]		„ „
„ *latifolia*	15		„ „

HELIOBAE

POTAMOGETONACEAE

	n	2n	
Zostera marina L.		ca. 13	ROSENBERG, 1901, 1904*b*.

[1]) In previous list, GAISER (1926), the number was incorrectly given as 8 for ISHIKAWA (1916).

[2]) This number was found in parts of two root-tips, which showed larger cells.

[3]) The presence of bivalents and univalents made it impossible to determine the exact number of chromosomes. As many as 22 units were counted in diakinesis.

[4]) Metaphases may be regular and show only bivalents or may include univalents as well as bivalents (ROSCOE, 1927*c*).

POTAMOGETONACEAE (continued)	n	2n	
Potamogeton foliosus RAF. . .	7		WIEGAND, 1899.
Ruppia maritima		16	GRAVES, 1908.
„ *rostellata* KOCH. . . .	8		MÜRBECK, 1902.
NAIADACEAE			
Najas major	6	12	GUIGNARD, 1899*a*, *b*.
	6	12 [1])	TSCHERNOYAROW, 1914.
„ *major* ALL.	6		GUIGNARD, 1898.
	6 [2])	12 [1])	TSCHERNOYAROW, 1927.
			TAKAMINE, 1927.
„ *marina* L. (= *N. major*)		14	MÜLLER, C., 1912.
	6	12, 14	WINGE, 1927*a*.
„ *flexilis*	8–12		CAMPBELL, 1897.
APONOGETONACEAE			
Aponogeton distachyus	8	16	SERGUEEFF, 1907.
	ca. 16		SUSSENGUTH, 1920.
Aponogeton fenestralis Hook.f.	8		SERGUEEFF, 1907.
ALISMACEAE			
Sagittaria sagittifolia		16	LIEHR, 1916.
„ L. F. *sinensis* MAK.		20	NAWA, 1928.
Alisma plantago		12	LIEHR, 1916.
BUTOMACEAE			
Butomus umbellatus L.	11–12		HOLMGREN, 1913.
„ *umbellatus*		16	LIEHR, 1916.
		40 [3])	TERBY, 1922.
Hydrocleis nymphaeoides . . .		12 [4])	SÜSSENGUTH, 1920. 1921.
HYDROCHARITACEAE			
Elodea canadensis	ca. 12 [5])		WYLIE, 1904.
	24	48	SANTOS, 1924.
Vallisneria gigantea GRAEBN. .	20	40	JØRGENSEN, 1927*a*.
„ *spiralis* L.	10	20	„ „
„ *spiralis*	8–9 [6])	17–18	WINGE, 1923.
		20 [7])	(NEWTON) reported by BLACKBURN, (1926) 1929.
	10	20	WINGE, 1927*a*.

[1]) One pair of chromosomes possessed satellites.

[2]) Seven chromosomes were sometimes found in the homeotypic metaphase and the extra small one was thought to have resulted from transverse division of a chromosome having a satellite.

[3]) In previous list (GAISER, 1926) the number 40 was omitted from the diploid column column for TERBY, 1922.

[4]) This number was determined in the emrbyo-sac-mother cell.

[5]) Heterochromosomes were found: ♀ 2n = 46 + 2x; ♂ 2n = 46 + x + y; ♀n = 23 + x; ♂n = 23 + x or 23 + y.

[6]) WINGE (1923) found heterochromos ones as follows: ♀ 2n = 16 + x + x; ♂ 2n = 16 + x; ♀n = 8 + x; ♂ n = 8 + x or 8.

[7]) According to NEWTON, the somatic chromosome number is 20 for both sexes.

HYDROCHARITACEAE (continued)	n	2n	
Hydrilla verticillata PRESL. . .		24 [1]	SINOTO & KIYOHARA, 1928.
TRIURIDALES			
TRIURIDACEAE			
Sciaphila japonica	24	48	(OGHA 1916) given by ISHIKAWA), 1916.
„ spec. (approaching S. *Andajensis* BECC. .	ca. 12		WIRZ, 1910.
GLUMIFLORAE			
GRAMINEAE			
Zea Mays [2])	$\frac{20_1}{2}$ $1 + \frac{18_1}{2}$ $2 + \frac{16_1}{2}$ etc. rarely 10		BEADLE & McCLINTOCK, 1928.
Zea Mays L.	10		LONGLEY, 1924 [3]), 1927*b* [4]); RANDOLPH & McCLINTOCK, 1926.
	10_3	30	RANDOLPH & McCLINTOCK, 1926.
Zea Mays L. (*sugary* varieties)[1])	10		KUWADA, 1925.
	11–12 [5])	20–22	„ „
	$\frac{21}{2}$, 11 [6])		LONGLEY, 1925.
Alpha	10	20	RANDOLPH, 1928.
Bantam Evergreen	10	20	„ „
Black Mexican [4])	12	20–24	KUWADA, 1915, 1919.
	8–11	20–23	FISK, 1925.
	9–11 [7])	22 [8])	FISK, 1927.

[1]) At diakinesis, metaphase and anaphase of the first meiotic division in microsporocytes, one geminus is seen to consist of a longer and a shorter chromosome.

[2]) This collection of maize plants was considered to carry factors for male sterility.

[3]) LONGLEY (1924) studied 4 varieties of maize, including Chinese Waxy and Tepic.

[4]) LONGLEY (1927*b*) states that in the following varieties (Golden Bantam, Stowell's Evergreen, and more frequently in Country Gentleman, Black Mexican, White Sheath, and White Dent Crosby) plants occurred with a somatic number of more than 20 chromosomes.

[5]) KUWADA (1911, 1915, 1919) thought there was a tendency for sugar corns to have a higher chromosome number than starch corns (n = 10). In 1925 KUWADA studied sugar corns from 5 sources and only in material from one source (i.e., the Agr. Coll., Tokyo Imp. Univ.) did he find irregular numbers.

[6]) In 2 strains of sweet corn, LONGLEY (1925) found $\frac{21}{2}$ and 11 chromosomes.

[7]) In 3 plants there were 11 to 13 bivalents, but more frequently there were fewer (9—11) present, and some additional (1—6) round bodies.

[8]) A variation of 20—23 was found in the somatic counts, but 22 was the number in the majority of cells.

GRAMINEAE (continued)	n	2n	
Zea (continued)			
	ca. 12	24	REEVES, 1925.
	$11+2_{I}$, $12+1_{I}$, $12+3_{I}$,13, $13+1_{I}$,14	20,23, 28 [1])	RANDOLPH, 1928.
Country Fentleman [1]) . . .	10		KIESSELBACH & PETERSEN, 1925.
Crosby	10	20	FISK, 1925.
	10		„ 1927.
Early Eight Sugar Corn . .	9–12		KUWADA, 1911.
Early White Evergreen . . .	10	20	RANDOLPH, 1928.
Evergreen	10 [2])	20	FISK, 1925, 1927.
Golden Bantam [1])	10		REEVES, 1925.
	10 [2])	20 [3])	FISK, 1925, 1927.
	10,10+	20–22	RANDOLPH, 1928.
Hickox Sweet	10 [4])		FISK, 1927.
Red Sugar Corn	9–12		KUWADA, 1911.
Stowell's Evergreen [5]) . . .	10		REEVES, 1925.
Sugar Corn	9–11,12, 13–14		KUWADA, 1915, 1919.
Zea Mays L. (Flint Varieties):			
Argentine	10		REEVES, 1925.
Gehu	10		KIESSELBACH & PETERSEN, 1925.
Hall's GoldenNugget . . .	10,$10+1_{I}$	21, 21	RANDOLPH, 1928.
King Philip's	10		KIESSELBACH & PETERSEN, 1925; REEVES, 1925.
Lancaster	10		REEVES, 1925.
Luce's Favorite	10	20	RANDOLPH, 1928.
New York State Flint . . .	10,$11+1_{I}$, $10+3_{I}$	20–32 [6])	„ „
Red Flint	10	20	FISK, 1925.
	10		„ 1927.
White Australian	10		KIESSELBACH & PETERSEN, 1925.

[1]) Eighteen out of 20 plants showed extra chromosomes (20—28) with a majority having 23.
[2]) In diakinesis, 9 or 10, and 10 or 11 chromosomes could be counted and only once, in Golden Bantam, 9 and 11 were counted in homoeotypic metaphase.
[3]) In somatic counts there were variations of 19 or 20 and 20 or 21.
[4]) There were variations of 1 chromosome in the counts, as 9 or 10, and 10 or 11.
[5]) See pag. 340 foot-note 4.
[6]) A high percentage (8 of 10 plants) showed extra chromosomes, 20—23.

GRAMINEAE (continued)	n	2n	
Zea (continued)			
White Flint	10 [1]		KUWADA, 1911.
Yellow Flint	10	20 [2]	FISK, 1925, 1927.
Zea Mays L. (Dent Varieties):			
Bloody Butcher	10	20	RANDOLPH, 1928.
Calico (*North Platte*)	1;		KIESSELBACH & PETERSEN, 1925.
Cornell II	10	20	RANDOLPH, 1928.
Douthit Prolific	10		KIESSELBACH & PETERSEN, 1925.
Earliest of Early Dents . . .	10	20	RANDOLPH, 1928.
Esperanza	10		KIESSELBACH & PETERSEN, 1925.
Eureka	10	20	RANDOLPH, 1928.
Golden Glow Dent	10 [1]	20 [2]	FISK, 1925, 1927.
Hogue Yellow Dent	10		KIESSELBACH & PETERSEN, 1925.
Inbred Strains (*Hogue* Nos.)[3]	10		KIESSELBACH & PETERSEN, 1925.
Leaming	10	20	RANDOLPH, 1928.
Mexican June	10		KIESSELBACH & PETERSEN, 1925.
Minnesota 13	10	20	RANDOLPH, 1928.
Nevada White Prize Nos. 659 & 676	10		KIESSELBACH & PETERSEN, 1925.
Pride of Michigan	10	20	RANDOLPH, 1928.
Pride of the North	10		KIESSELBACH & PETERSEN, 1925.
Pride of Saline	10		KIESSELBACH & PETERSEN, 1925.
Reid Yellow Dent	10		KIESSELBACH & PETERSEN, 1925.
Substation White	10		KIESSELBACH & PETERSEN, 1925.
(One commercial race)	10		REEVES, 1925.
Zea Mays (varieties valled „Starch")	12,13[4]		LONGLEY, 1925.
Black Starch	7–10		KUWADA, 1915, 1919.

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[1]) There were variations of 1 chromosome in the counts, as 9 or 10 and 10 or 11.
[2]) In somatic counts there were variations of 19 or 20 and 20 or 21.
[3]) HOGUE Nos. 8, 724, 726, 731, 742, and 745.
[4]) In 25 strains of starchy maize, LONGLEY (1925) found 12, 13 chromosomes.

GRAMINEAE (continued)	n	2n	
Zea (continued)			
Red Starch	9–10		KUWADA, 1911
Yellow Starch	10		„ „
Starchy heterozygous for dwarf		20 [1])	FISK, 1927.
Zea Mays (Pop Corns)			
Amber Rice Pop Corn . . .	10–11		KUWADA, 1915, 1919.
Black Beauty Pop	10	20	RANDOLPH, 1928.
Red Pericarp Pop	10	20	„ „
Tom Thumb	10		REEVES, 1925.
White Pearl Pop	10		KIESSELBACH & PETERSEN, 1925.
White Rice Pop	10	20	RANDOLPH, 1928.
Pop Corn	10.	20 [1])	FISK, 1925, 1297.
Zea Mays L. (24 genetical cultures)		20–26 [2])	RANDOLPH, 1928.
„ *Mays* L. „*anther-eared semi-dwarf*"	10	20	FISK, 1925.
	10 [3])		„ 1927.
„ *Mays Chinese Corn* . . .	10		KUWADA, 1915, 1919; KIESSELBACH & PETERSEN, 1925
„ *Mays* L. Floury Corn. . .	10	20	FISK, 1925.
		20 [1])	„ 1927.
„ *Mays Golden Broach field corn*	10		KUWADA, 1911.
„ *Mays* L. var. *indentata* . .		20 [4])	KOSHUCHOW, 1927, 1928.
„ *Mays* L. var. *tunicata* . .	10		KUWADA, 1915, 1919
„ *ramosa*	10	20	FISK, 1925.
		20 [5])	„ 1927.
	10		KIESSELBACH & PETERSEN, 1925.
„ *Mays* (Amber Rice Pop Corn × Black Mexican) .	10		KUWADA, 1915, 1919.
„ *Mays* (Amber Rice Pop Corn × Sugar Corn) . .	9–11, 12, 13–14		KUWADA, 1915, 1919.
„ *Mays* (Golden Glow Dent × Crosby Sweet)	10		FISK, 1925, 1927.
„ *Mays* (Golden Glow Dent × Black Mexican) . . .	16 [6])		„ „ „

[1]) In somatic counts there were ariations of 19 or 20 and 20 or 21 chromosomes.
[2]) 68 % of the plants of 24 genetical cultures had > 20 chromosomes.
[3]) There were variations of 1 chromosome in the counts, as 9 or 10, and 10 or 11.
[4]) Tetraploid and octoploid numbers were obtained as a result of treatment of seedlings with higher and lower than optimal temperatures for germination.
[5]) In somatic counts there were variations of 19 or 20 and 20 or 21 chromosomes.
[6]) There were variations of 9, 10 10 + 1_1, 11 on the heterotypic spindle (FISK 1927)

GRAMINEAE (continued)	n	2n	
Zea (continued)			
Zea Mays (Evergreen Sweet × Golden Bantam F_2) . . .	10		Fisk, 1925, 1927.
Coix agrestis Lowr. [1])		20	Kuwada, 1915, 1919.
„ *lachryma jobi* L. [1]) . . .	10		Longley, 1924*b*.
		20	Taylor, 1925*c*.
Tripsacum lanceolatum Rupr.	ca. 35		Longley, 1924*b*.
„ *laxum* Nash . . .	ca. 35		„ „
„ *pilosum* Scribn. & Merr.	ca. 35		„ „
„ *Barberi* Jesw. . .	46		Jeswiet, 1928.
„ *officinarum* . . .		28	Franck, 1911.
		68	Kuwada, 1915, 1919.
	40		Bremer, 1928*a*, *c* [2]), *d*.
„ *officinarum* var. *Ardjoeno*	40		„ 1923, 1924, 1928*c*.
„ *officinarum* var. *Batjan*	40		„ „ , „
„ *officinarum Banjarmasin hitam* .	40		„ „ „
„ *officinarum* var. *Black Cheribon* . .	40	ca. 80	„ „ „
„ *officinarum* var. *chunnee*	46–50	ca. 91	„ „
Saccharum officinarum var. *Fidji*	40	ca. 80	Bremer, 1923, 1924.
„ *officinarum* var. *Green German New Guinea*	40		„ „ „
„ *officinarum* var. *Teboe Hitam Rokan*	ca. 30		„ „
„ *officinarum* var. *Hitam Rokan* .	33–35	55	„ 1925.
„ *officinarum* var. *Lahaina*		80	„ 1924
	40		„ 1928*c*.
„ *officinarum* „*Loethers*" [3])	ca. 50	98–99	„ 1923, 1924.
	$\frac{99}{2}$	„	1928*c*, *d*.

[1]) *Coix agrestis* Lowr. and *C. lachryma jobi* L. may be the same species.
[2]) Many varieties were examined by Bremer (1928*c*).
[3]) Bremer (1928*c*) speaks of Loethers cane as Saccharum hybrid.
Jeswiet (1928) speaks of Loethers cane as probably related to *Saccharum sinense* Roxb.

GRAMINEAE (continued)	n	2n	
Saccharum (continued)			
	49		JESWIET, 1928.
Saccharum officinarum var. *Red Egyptian cane*		ca. 80	BREMER, 1923.
„ *officinarum* var. *Ruckee*	46–48		„ „
„ *officinarum* var. *Tanangge*	30		„ 1925.
„ *officinarum* var. *Teboe Sampang A*	ca. 40		„ 1923.
„ *officinarum* CK 28	40		„ 1928*c*.
„ *spontaneum* . . .		ca. 68	KUWADA, 1915, 1919.
„ *spontaneum* (*glagah of Java*)	56		BREMER, 1928*a*, *b*, *c*, *d*.
„ *spontaneum* (*Glagah Tabongo of Celebes*) [1])	40		„ 1925, 1928*b*, *c*, *d*.
„ *spontaneum* (*Glagah alas Djatiroto*) . .	56		„ 1923.
„ *spontaneum* (*Glagah alas Kepandjin* .	56		„ „
„ *spontaneum* (*Glagah Kletak* III) . . .	56		„ „
„ *spontaneum* (*Glagah alas Soemberpoetih*)	56		„ 1928*c*.
„ *spontaneum* (*Glagah alas Troeno*) . . .	56		„ „
„*Kassover*" (probably *S. officinarum* × *S. spontaneum*)	68		„ 1923, 1928*c*, *d*.
„*Naz Reunion*" (Saccharum hybrid(?))	$\frac{109-110}{2}$		„ 1928*c*.
Saccharum officinarum × *S. spontaneum* (*Glagah Tabongo*) . .	$\frac{120}{2}$		„ 1928*d*.
„ *officinarum Ardjoeno*) × *S. spontaneum* (*Glagah Tabongo*)	$\frac{120}{2}$		„ 1928*c*.

[1]) In BREMER (1925) and (1928*b*) *Glagah Tabongo* was given as a variety of *S. officinarum* but in BREMER (1928*c* and *d*) *Glagah Tabongo* from Celebes is given under *spontaneum*.

GRAMINEAE (continued)	n	2n		
Saccharum (continued)				
Saccharum officinarum × *S. spontaneum* F_1 . .	$\frac{136}{2}$		BREMER,	1928*a*.
	$62\text{–}66+\frac{12_1\text{-}14_1}{2}$		„	1928*c*.
„ *officinarum* × *S. spontaneum* (Celebes)	$\frac{136}{2}$		„	1928*a*.
„ *officinarum* × „*Kassoer*"	ca. $\frac{148}{2}$		„	1928*d*.
„ *officinarum* (*Bandjarmasin hitam* × „*Loethers*") 100 POJ		89	„	1924.
„ *officinarum* × „*Loethers* 100 POJ	$\frac{89}{2}$		„	1928*c*, *d*.
„ *officinarum* (*Djamprox*) × „*Loethers*" = *Koesoma* . . .		93	„	1924.
„ *officinarum* × „*Loethers*" = *Koesoma*	$\frac{93}{2}$		„	1928*c*.
„ „*Loethers*" × *S. spontaneum* . . .	ca. $\frac{127}{2}$		„	„
„ 100 POJ × *S. spontaneum*	70(?)		„	1928*d*.
	ca. $\frac{127}{2}$		„	1928*c*.
„ *officinarum* × *S. spontaneum* F_2 .	ca. $\frac{136}{2}$		„	„
„ *officinarum* × (*S. officinarum* × *S. spontaneum*) . . .	$\frac{148}{2}$		„	1928*a*, *c*.
„ *spontaneum* × (*S. officinarum* × *S. spontaneum*) . . .	62		„	1928*c*.
„ *officinarum* × [*S.*				

GRAMINEAE (continued)	n	2n	
Saccharum (continued)			
officinarum × (*S. officinarum* × *S. spontaneum*)]. . .	57		Bremer, 1928*c*
„ *spontaneum* × {*S. officinarum* × [*S. officinarum* × (*S. officinarum* × *S. spontaneum*)]} . .	> $\frac{160}{2}$		„ „
„ *officinarum* × *S. spontaneum*) × {*S. officinarum* × [*S. officinarum* × (*S. officinarum* × *S. spontaneum*)]} . .	57		„ „
{(„ *officinarum* × *S. spontaneum*) × *S. officinarum*} × *S. officinarum* . . .	$\frac{106\text{–}120}{2}$		„ 1928*a*.
{ „ *officinarum* × *S. spontaneum* (n = 57)} × *S. spontaneum*	ca. $\frac{170}{2}$		„ „
S. officinarum × *S. spontaneum* crosses:			
(*Gestreept Preanger* × *Glagah alas Troeno*) 106	$\frac{136}{2}$		„ „
(*Gestreept Preanger* × *Glagah alas Troeno*) 107	$\frac{136}{2}$		„ „
(*Zwart Borneo* × *Glagah alas Soemberpoetih*) I 1052, I 1056	$\frac{136}{2}$		„ „
(*Soerat Banteng* × *Glagah alas Soemberpoetih*, I 1064, I 1072	$\frac{136}{2}$		„ „
(*Lahaina* × *Glagah alas*			

GRAMINEAE (continued)	n	2n	
Saccharum officinarum × *S spontaneum* F_2 crosses (continued)			
Soemberpoetih) I 1078, 1080, 1086	$\frac{136}{2}$		BREMER, 1928c.
(2064 POJ (*Zw. Cheribon* × *Fidji*) × *Glagah alas Troeno*) 2775 POJ	$\frac{136}{2}$		„
Teboe Monjet (*S. officinarum* × *Glagah*)	$\frac{143–144}{2}$		„
Saccharum officinarum × *S. spontaneum* F_2:			
2027 POJ Kassoer	$\frac{129–130}{2}$		„
2028 POJ Kassoer	$\frac{\pm 136}{2}$		„
238 K_2 I 1086 = *Lahaina* × *Glagah alas Soemberpoetih*	$\frac{136–137}{2}$		„
238 Kg, I 1086 = Lahaina × *Glagah alas Soemberpoetih* .×	$\frac{134}{2}$		
K 1539, I 1061 = *Zwart Borneo* × *Glagah alas Soemberpoetih*	$\frac{136}{2}$		
K 1541, I 1061 = *Zwart Borneo* × *Glagah alas Soemberpoetih*	$\frac{134–136}{2}$		„
K 1545, I 1063 = *Soerat Banting* × *Glagah alas* Soem*berpoetih*	$\frac{136}{2}$		„
2 K 16, I1063 = *Soerat Banting* × *Glagah alas Soemberpoetih*	$\frac{136}{2}$		„
I 1087, G 107 = *Gestreept Preanger* × *Glagah alas Troeno*	$\frac{132–133}{2}$		„

GRAMINEAE (continued)	n	2n	
Saccharum officinarum × *S. spontaneum* F_2 (continued)			
I 1090, G 107 = *Gestreept Preanger* × *Glagah alas Troeno*	$\frac{125\text{-}126\text{-}128}{2}$		BREMER, 1928*c*.
Suikerriet × *Glagah*:			
#581 (*Bandjarmasin hitam* × *Glagah Kepandjen*) . .	$\frac{136}{2}$		„ „
#581 × *Glagah Soekapoera* 2	$\frac{123\text{–}124}{2}$		„ „
K 1525 × *Glagah Soekapoera* 2	$\frac{123\text{–}124}{2}$		„ „
11 K9 × *Glagah Soekapoera*2	$\frac{123\text{–}124}{2}$		„ „
11 K23 × *Glagah Soekapoera* 2	$\frac{123\text{–}124}{2}$		„ „
11 K 45 × *Glagah Soekapoera* 2	$\frac{123\text{–}124}{2}$		„ „
Suikerriet × *Kassoer*:			
1807 POJ. (*Gestreept Preanger* × *Kassoer*)	$\frac{147\text{–}148}{2}$		„ „
2222 POJ. (*Zwart Cheribon* × *Kassoer*)	$\frac{146}{2}$		„ „
Tjepiring 136 *Zwart Cheribon* × *Kassoer*	$\frac{150}{2}$		„ „
2725 POJ (GK 28 × 2364 POJ.)	$\frac{106\text{–}107}{2}$		„ „
2878 POJ (GK 28 × 2364 POJ.)	$\frac{119\text{–}120}{2}$		„ 1928*c*, *d*.
2883 POJ. (GK 28 × 2364 POJ.)	$\frac{114\text{–}115}{2}$		„ 1928*c*.
2727 POJ. (2364 POJ × *S. officinarum* (*Batjan*)) . .	$\frac{133\text{–}134}{2}$		„ „

GRAMINEAE (continued)	n	2n	
Suikerriet × *Kassoer* (continued)			
O 1744 (*Ardjoeno* × *Glagah Tabongo*	$\frac{120}{2}$		Bremer, 1928*b*.
1001 P 1 (*Loethers* × *Glagah alas Soemberpoetih*) . . .	$\frac{147–148}{2}$		„ „
O 1743 (*Loethers* × *Glagah Tabongo*	$\frac{139}{2}$		„ „
15 NI (*Naz Reunion* × *Glagah Tabongo*)	$\frac{151–152}{2}$		„ „
G 92 (100 POJ. × *Glagah alas Troeno*)	$\frac{139}{2}$		„ „
G 95 (100 POJ × *Glagah alas Troeno*)	$\frac{143–144}{2}$		„ „
M 2601 (100 POJ. × *Glagah alas Kepandjen*)	$\frac{143–144}{2}$		„ „
15 N5 (100 POJ. × *Glagah alas Kepandjen*)	$\frac{143–144}{2}$		„ „
G 104 (*Gestreept Preanger* × *Glagah alas Troeno*) . . .	$\frac{136}{2}$		Bremer, 1928*c*.
2858 POJ (*Lahaina* × G104)	$\frac{145}{2}$		„ „
P 1206 (*Zwart Cheribon* × I 1086	$\frac{152}{2}$		„ „
2364 POJ (100 POJ. × *Kassoer*)	$\frac{148}{2}$		„ 1928*c*, *d*.
2323 POJ (100 POJ. × *Kassoer*)	$\frac{150–152}{2}$		„ 1928*c*.
2354 POJ (100 POJ. × *Kassoer*)	$\frac{157}{2}$		„ „
2765 POJ (*Kassoer* × EK_2)	ca. $\frac{139}{2}$		„ „

GRAMINEAE (continued)	n	2n	
Suikerriet × *Kassoer* (continued)			
2767 POJ (*Kassoer* × EK_2)	$\frac{133-134}{2}$		BREMER, 1928c.
2784 POJ (*Kassoer* × EK_2)	$\frac{138}{2}$		„ „
2786 POJ. (*Kassoer* × *Batjan*)	$\frac{144}{2}$		„ „
2789 POJ. (2029 POJ. × 247 B)	$\frac{126-128}{2}$		„
P 1238 (I 1081 × DIJ2) . .	$\frac{129}{2}$		„
P 1233 (I 1081 × *Bandjermasin hitam*)	$\frac{124-125}{2}$		„
557 M5 (♯581 × *Loethers*) .	$\frac{118}{2}$		„ „
1007 P_2 (I 1081 × *Loethers*)	$\frac{116-117}{2}$		„ „
2714 POJ (2364 POJ × EK 28)	$\frac{114-116^{1)}}{2}$		„ „
2722 POJ (2364 POJ × EK 28)	$\frac{108}{2}$		„ „
2875 POJ. (2364 POJ × EK 28)	$\frac{110}{2}$		„ „
2836 POJ (2364 POJ × *Ardjoeno*)	$\frac{112}{2}$		„ „
2934 POJ (2364 POJ × Sw 111)	ca. $\frac{116}{2}$		„ „
2738 POJ (1808 POJ × *Fidji* 1808) [2])	$\frac{130-131}{2}$		„ „
2782 POJ (2194 POJ [3]) × *Sampang* A)	ca. $\frac{133}{2}$		„ „

[1]) This was very abnormal in division.
[2]) 1808 Poj is *Gestreept Preanger* × *Kassoer*.
[3]) 2194 Poj is *Zwart Cheribon* × *Kassoer*.

GRAMINEAE (continued)	n	2n	
Suikerriet × *Kassoer* (continued)			
M 602 (2194 POJ. × SW_3)	ca. $\frac{130}{2}$		BREMER, 1928*c*.
M 664 (2194 POJ × EK_2)	ca. $\frac{128}{2}$		„ „
10 P_2 (722 POJ × *Glagah alas Troeno*)	$\frac{162}{2}$		„ „
1228 P_2 (2875 POJ × *Glagah alas Kloet*)	$\frac{87\text{–}88}{2}$		„ „
113 P_1 (Zwart Borneo × 11 K [1]))	$\frac{140}{2}$		„ „
2722 POJ × 11 K	$\frac{113\text{–}114}{2}$		„ „
2722 POJ	$\frac{108}{2}$		„ „
1760 I (2722 POJ × 11 K)	$\frac{166}{2}$		„ „
01738 (2722 POJ × 11 K)	$\frac{118}{2}$		„ „
01728 (2722 POJ × H 585)	65–70		„ „
0729 (277 POJ × H 585)	$\frac{128}{2}$		, „
01718 (2836 POJ × I 1080)	$\frac{123\text{–}124}{2}$		„ „
Glagah Tabongo × *Glagah Tabongo* [2])	48–56		„ „
Avena abyssinica	14	28	STANTON & DORSEY, 1927.
„ *barbata*	7		KIHARA, 1924; GOULDEN, 1926.
	14		KIHARA, 1919*b*, 1924; DORSEY, E., 1925.
	14	28	HUSKINS, 1926, 1927*b* [3]).
		32	NIKOLAEWA, 1922*b*.
„ *brevis*		14	NIKOLAEWA, 1922*b*, 1923.
	7		GOULDEN, 1926.
	7	14	HUSKINS, 1926, 1927*b*.
„ *brevis* ROTH.	7		AASE & POWERS, 1926.
„ *byzantina*	21		KIHARA, 1919*b*, 1924.

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1) 11 K is H 581 × *Glagah Soekapoera* 2.

2) In 1923 from these crosses several giant plants with 48—56 chromosomes were produced. In 1924 the cross produced only 2 giants and one had 42 chromosomes.

3) The form studied by HUSKINS (1927*b*) was *Avena barbata*, Cornell strain.

GRAMINEAE (continued)	n	2n	
Avena (continued)			
	21	42	HUSKINS, 1927*b*.
		44	NIKOLAEWA, 1922*b*, 1923.
Avena clauda		14	NIKOLAEWA, 1922*b*, 1923.
„ *fatua*.	21		KIHARA, 1919*b*, 1924; HUSKINS 1925; DORSEY, E., 1925; STOLZE 1925.
	21	42	HUSKINS, 1927*b*; GOULDEN, 1926.
		48	NIKOLAEWA, 1922*b*, 1923.
„ *fatua* A.	21		HUSKINS, 1926.
„ *ludowiciana*.		44	NIKOLAEWA, 1922*b*, 1923.
	21	42	HUSKINS, 1926, 1927*b*.
„ *nuda*	21	42	GOULDEN, 1926; HUSKINS, 1926, 1927*b*.
„ *nuda briaristata*		14	NIKOLAEWA, 1922*b*, 1923.
„ *nuda inermis*.		48	„ „ „
„ *pilosa*		14	„ „ „
„ *sativa*	21		KIHARA, 1919*b*, 1924; HUSKINS 1925; WINGE, 1925.
	21	42	GOULDEN, 1926.
		48	NIKOLAEWA, 1922*b*.
		42–48	„ 1923.
„ *sativa* var. *Banner* . . .	21		HUSKINS, 1926.
	21	42	„ 1927*b*.
„ *sativa* var. *Gigantica* [1]) .	21	42	„ „
„ *sativa* var. *Lincoln*. . .	21	42	„ „
„ *sativa* L.var. *Markton* .	21		AASE & POWERS, 1926.
„ *sativa* var. *Orientalis* . .	21	42	HUSKINS, 1927*b*.
„ *sativa* var. *Victory* . . .	21		„ 1926.
	21	42	„ 1927*b*.
„ *sativa patula* var. *Aurea* KCKE.	21	42	STOLZE, 1925.
„ *sativa* (dwarf)	21 [2])		GOULDEN, 1926.
„ *sativa* (fatuoid)	21		HUSKINS, 1925; WINGE, 1925.
„ *sativa* (fatuoid type 1 [3]))	21, $19+1_1+1_3$, $19+1_4$		„ 1927*a*.

[1]) The form studied by HUSKINS (1927*b*) was *A. gigantica* (Cornell).

[2]) A great deal of irregularity occurred in the heterotypic division (only occasional normal arrangement of chromosomes on the equatorial plate being observed) and no cells were found that were definitely undergoing a homoeotypic division.

[3]) Types [1]) and [2]) (HUSKINS, 1927*a*), gave rise to normals, heterozygotes and fatuoids with different arrangements of chromosomes as shown respectively in the list above. In Type [3]) normals and heterozygotes segregated most frequently, but rarely dwarf sterile fatuoids with 40 chromosomes appeared. In type four heterozygotes were more abundant.

GRAMINEAE (continued)	n	2n	
Avena (continued)			
Avena sativa (fatuoid type 2) [1]	21, $21+1$, $20+1_3$, $20+1_4$		HUSKINS, 1927*a*.
„ *sativa* (fatuoid type 3) .	21, $19+1_1$, 40_1		„ „
„ (fatuoid type 4)	41_1		„ „
„ *sativa* heterozygous fatuoids F_1 (normals) . . .	21	42	„ 1927*b*.
„ *sativa* heterozygous fatuoids F_1 (het. fatuoids	$19+1_3+1_1$	42	„ „
„ *sativa* heterozygous fatuoids F_1 (hom. fatuoids)	$19+1_4$	42	„ „
„ *sativa* Type 2 heterozygous fatuoid	$20+1_1$	41	„
„ *sativa* Type 3 dwarf homozygous fatuoids . .	40		„ „
„ *sativa* Type 3 heterozygous fatuoid	$20+1_1$	41	„
„ *sativa* Type 4 heterozygous fatuoid	$20+1_3$, $21+1_1$	43	„ .
„ *sativa* Type 4 homozygous fatuoid	22, $20+1_4$	44	. 1927*a*.
„ *sativa* Type A heterozygous fatuoids		42	„ 1928*c*.
„ *sativa* Type A homozygous fatuoids		42	„ „
„ *sativa* Type A heterozygous fatuoids (from Victory Oats).	$20+1_1$	41	„ „
„ *sativa* Type B heterozygous fatuoids		41	„ „
„ *sativa* Type C heterozygous fatuoids		43, 44	„ „
„ —— homozygous fatuoids from vars. Banner Storm King, and Old Island	21 [2]	42	„ 1926
„ —— heterozygous fatu-			

[1]) See page 353 foot-note 3.

[2]) Meiotic divisions were usually regular, but irregularities were found in a significantly large number of cases.

GRAMINEAE (continued)	n	2n	
Avena (continued)			
oids from vars. Banner and Victory	21 [1]		HUSKINS, 1926.
Avena sterilis	21		KIHARA, 1919*b*, 1924.
	21	42	GOULDEN, 1926; HUSKINS, 1926 1927*b*.
		44	NIKOLAEWA, 1922*b*, 1923.
„ *strigosa*	7		KIHARA, 1919*b*, 1924; WINGE, 1925; GOULDEN, 1926.
	7	14	HUSKINS, 1926, 1927*b*.
		14	NIKOLAEWA, 1922*b*.
		14–16	„ 1923.
„ *stigosa* SCHREBER . . .	7		AASE & POWERS, 1926.
„ *wiestii*	7		DORSEY, E., 1925.
„ *wiestii* STEUDEL	7		AASE & POWERS, 1926.
„ —— „Stanton's Prolific Dwarf" [2])		42	GOULDEN, 1926.
Arrhenatherum elatius L. . . .	14		AASE & POWERS, 1926.
Phragmites communis	18		TISCHLER, 1918*b*.
„ *communis* var. *Pseudodonax*	18		„ „
FESTUCA [3])			
Section Montanae			
Festuca montana M. BIEB . .		14	LEVITSKY & KUZMINA, 1927.
Section Scariosae			
Festuca granatensis BOISS. (*F. scariosa* LAG.).		14	„ „ „ „
Festuca Mairei St.-Y.		28	„ „ „ „
Section Subbulbosae.			
Festuca spadicea L.		14	„ „ „ „
„ *triflora* DESF		14	„ „ „ „
Festuca elatior var. *arundinacea*		ca. 40	EVANS, 1926.
„ *elatior* L. subsp. *arundinacea* HACK. var. *genuina* HACK. . . .		42	LEVITSKY & KUZMINA, 1927.
„ *elatior* L. subsp. *arundinacea* HACK. var. *Fenas* HACK. (*glaucescens* BOISS.) subvar. *corsica* HACK. . . .		42	„ „ „ „

[1]) Irregularities of meiotic divisions occurred more frequently.
[2]) This was obtained in the progeny of a selection from a cross between Aurora and Pringless Progress varieties of oats.
[3]) Arrangement under sections is according to HACKEL and SAINT-YVES. For references see bibliography of LEVITSKY & KUZMINA, 1927.

GRAMINEAE (continued)	n	2n	
Festuca (continued)			
Festuca elatior L. subsp. *arundinacea* HACK var. *Letourneuxiana* St.-Y subvar. *Pitardii* St.-Y.		70	LEVITSKY & KUZMINA, 1927.
„ *elatior* L. subsp. *arundinacea* HACK. var. *cirtensis* St.-Y. . . .		70	„ „ „ „
„ *elatior* var. *pratensis* .	7		EVANS, 1926.
„ *elatior* var. *pratensis* subvar. *typica*. . . .		28	DE LITARDIÈRE, 1923*a*.
„ *elatior* L. subsp. *pratensis* HACK. var. *genuina* HACK		14	LEVITSKY & KUZMINA, 1927.
„ *gigantea* VILL.		42	„ „ „ „
„ *ovina* var. *Briquetii* subvar. *eu-Briquetii* .		28	DE LITARDIÈRE, 1923*a*.
„ *ovina* var. *gallica* subvar. *Costei*		28	„ „ „
„ *ovina* var. *glauca* subvar. *eu-glacau* . . .		28	„ „ „
„ *ovina* var. *tenuifolia* .		28	„ „ „
„ *ovina* var. *valesiaca* . .		28	„ „ „
„ *ovina* L. subsp. *eu-ovina* HACK. var. *capillata* HACK.		14	LEVITSKY & KUZMINA, 1927.
„ *ovina* L. subsp. *eu-ovina* HACK. var. *vulgaris* KOCH. subvar. *pilifera* St.-Y		14	„ „ „ „
„ *ovina* L. subsp. *eu-ovina* HACK. var. *duriuscula* KOCH. subvar. *genuina* KOCH. . . .		42	„ „ „ „
„ *ovina* L. subsp. *Beckeri* HACK.		28	„ „ „ „
„ *ovina* L. subsp. *indigesta* HACK. var. *Litardierei* St.-Y.		70	„ „ „ „
„ *ovina* L. subsp. *sulcata* HACK. var. *Callieri* HACK. subvar. *conferta* St.-Y.		14	„ „ „ „
„ *ovina* L. subsp. *sulcata*			

GRAMINEAE (continued)	n	2n	
Festuca (continued)			
HACK. var *valesiaca* KOCH		42 and 14	LEVITSKY & KUZMINA, 1927,
Festuca ovina L subsp. *sulcata* HACK. var. *Duvalii* St.-Y.		42	„ „ „ „
„ *rubra* L. subsp. *eurubra* var. *genuina* HACK		56	„ „ „ „
„ *rubra* L. subsp. *heterophylla* HACK.		42	„ „ „ „
„ *rubra* L. subsp. *nevadensis* HACK. var. *Hackelii* LIT. et MAIRE, subvar. *brevifolia* LIT et MAIRE		70	„ „ „ „
„ *spadicea* var. *genuina* subvar. *aurea* . . .		28	DE LITARDIÈRE, 1923*a*.
„ *varia* var. *eu-scoparia* subvar. *Kerneri* . . .		28	„ „ „
Lolium linicola SONDER (L. *remotum* SCHRNK.) . .		14	FAWORSKI, 1927.
„ *perenne* L.		14	„ „
„ *perenne*	7		EVANS, 1926.
„ *perenne* var. *multiflorum*	7		EVANS, 1926.
„ *persicum* BOISS. . .		14	FAWORSKI, 1927.
„ *temulentum* L.		14	„ „
„ *perenne* × *L. perenne* var. *multiflorum* . . .	7 [1])		EVANS, 1926.
Secale africanum STAPF. . . .		14, 15	EMME, 1927.
	7	15–16[2])	„ 1928.
„ *cereale*		14	NIKOLAEWA, 1924.
„ *cereale* L.		12	NĚMEC, 1910*a*.
	6		(WESTGATE) given by EAST, 1915.
	8		NAKAO, 1911.
	7		SAKAMURA, 1918; FERRAND, 1923.
	7, 8		GOTOH, 1924; BELLING, 1925*a*.
„ *cereale* L. var. *Rosen*. .	7		DORSEY, E., 1925; AASE & POWERS, 1926.

[1]) Lagging chromosomes were occasionally found in the divisions of pollenmother cells.
[2]) A nucleus with 23 chromosomes was also found.

GRAMINEAE (continued)	n	2n	
Secale (continued)			
Secale cereale L. (Winter Rye) .	7, 8	14, 16	KIHARA, 1924.
		14, 16	EMME, 1927.
„ *cereale* L. (Summer Rye)	7, 8	14, 16	KIHARA, 1924.
		14, 16	EMME, 1927.
„ *cereale* L. var. *Afghanicum*. VAV.		14,15,16	„ „
		14, 16[1])	„ 1928.
„ *cereale* L. var. *Afghanicum* VAV. # 3046 . . .		14	„ „
„ *cereale* L. var. *eligulatum* VAV.		14, 16	„ 1927.
„ *cereale* L. var. *eligulatum* VAV. # 624		14	„ 1928.
„ *cereale* var. *Prolific* . .	7		THOMPSON, 1926*a*.
„ *cereale* L. var. *vulgare*. .	7	14	STOLZE, 1925.
„ *cereale* L. var. *vulgare* KÖRN, [2]).	7	14	EMME, 1928.
„ *cereale* L.) „*nichtzerbrechlicher* var.")		14	„ „
„ *cereale* L. (*halbzerbrechlicher* var."	7	14	EMME, 1928.
„ *cereale* (#3193 from Afghanistan) („*halbzerbrechlicher* var.). . . .	7	14	„ „
„ *fragile* M.B.	7, 8	14, 16	„ 1927, 1928.
„ *montanum* GUSS. . . .	(6–) 7	14	STOLZE, 1925.
		14, 16[3])	EMME, 1927.
„ *montanum* GUSS. s. l. . .	7, 8	14, 16	„ 1928.
Triticum acuminatum KAJ. . .		28	KAJANUS, 1927.
„ *aegilipoides* LINK. .		14	STOLZE, 1925.
„ *aegilipoides boeoticum*	7	14	KIHARA, 1924.
	7		PERCIVAL, 1926; MICZYNSKI, 1927.
„ *aegilipoides* var. *Larionowi*.	7		PERCIVAL, 1926; MICZYNSKI, 1927.
„ *albidum*		42	SAPEHIN, 1927.
„ *compactum*	8		NAKAO, 1911.
	21		SAX, 1921, 1928; BLEIER, 1926

[1]) In a few cells, only 15 chromosomes were counted.
[2]) Three forms, winter, summer, and self-pollinated rye, from HERIBERT NILSON, were all found to have 14 chromosomes.
[3]) Syndiploid plates with 29 and 42 chromosomes were found in the periblem and epidermis of this species.

GRAMINEAE (continued)	n	2n	
Triticum (continued)			
		42	SAKAMURA, 1918; DE MOL, 1924
	21	42	KIHARA, 1924.
		50	NIKOLAEWA, 1922*a*.
		44	„ 1923.
Triticum compactum HOST. . .	21		KATAYAMA, 1928.
		42	WATKINS, 1928.
„ *compactum* var. *albiceps* KÖRN.	21		VAVILOV & JAKUSHKINA, 1925.
„ *compactum* var. *creticum* MAZZ. [1]). . . .	21		„ „ „ „
„ *compactum* var. *erinaceum*	21		PERCIVAL, 1926.
„ *compactum* var. *Fetisowi* KÖRN.	21		VAVILOV & JAKUSHKINA, 1925.
„ *compactum* HOST. var. *Humboldtii* KÖRN. (Wash. hybrid #143)		42	SAX, 1922; SAX & GAINES, 1924.
„ *compactum* HOST. (Hybrid 128)	21		AASE & POWERS, 1926.
„ *compactum Humboldtii* KCKE. (Hybrid 128)	21	42	GAINES & AASE, 1926.
„ *compactum Humboldtii* KCKE.	$21\frac{1}{2}$	21	GAINES & AASE, 1926.
„ *compactum* var. *Komaba* No. I & II . .		42	KAGAWA, 1926–7.
„ *compactum* HOST. var. *splendens*	8		KOERNICKE, 1896.
„ *dicoccum*		28	SAKAMURA, 1918; DE MOL, 1924; KAGAWA, 1926–7, 1927; NIKOLAEWA, 1922*a* 1923; SAX, 1922.
	14		SAX, 1921, 1928.
	14	28	KIHARA, 1924.
„ *dicoccum* SCHÜBL. . .	14		KATAYAMA, 1928.
		28	WATKINS, 1928.
„ *dicoccum* var. *Ajar* [2])	14		PERCIVAL, 1926; MICZYNSKI,
	7		1927.
„ *dicoccum* var. *atratum*	14		MICZYNSKI, 1927.

[1]) Two different races of this variety were used, #2840 and #2841.
[2]) According to MICZYNSKI (1927), this variety, from three different sources, gave the same number.

GRAMINEAE (continued)	n	2n	
Triticum (continued)			
„ *dicoccum* SCHR. var. *Black Winter Emmer*	14		AASE & POWERS, 1926.
„ *dicoccum* var. *farrum*	14		PERCIVAL, 1926; MICZYNSKI, 1927.
„ *dicoccum* var. *farrum* f. *abyssinicum* . . .	14		VAVILOV & JAKUSHKINA, 1925.
„ *dicoccum* var. *farrum* f. *vianicum* VAV. . .	14		„ „ „ „
„ *dicoccum* var. *farrum* f. *wolgense* FLAKSB[1]).	14		„ „ „ „
„ *dicoccum pycnurum* .	14		MICZYNSKI, 1927.
„ *dicoccum pycnurum* AL.	14		VAVILOV & JAKUSHKINA, 1925.
„ *dicoccum rufum* [2]) . .	14		MICZYNSKI, 1927.
„ *dicoccum uncinatum* .	14		„ „
„ *dicoccum vulpinum* .	14		„ „
(„ *polonicum* × *T. vulgare* F_2) = *T. dicoccum*		28	MALINOWSKI (1926), 1929.
„ *dicoccoides*	14	28	KIHARA, 1924
	7		DE MOL, 1924 [3]).
	14		BLEIER, 1926; TSCHERMAK & BLEIER, 1926.
„ *dicoccoides* KÖRN. . .	14		AASE & POWERS, 1926.
„ *dicoccoides* var. *Aaronsohni*	14		PERCIVAL, 1926.
		28	WATKINS, 1928.
„ *dicoccoides* KÖRN. var *Aaronsohni* FLAKSB.		28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.
„ *dicoccoides* KOTSCHY. var. *Aaronsohni* . .	14		STOLZE, 1925.
„ *dicoccoides* var. *fulvovillosum* KÖRN. . .	14		VAVILOV & JAKUSHKINA, 1925.
„ *dicoccoides* var. *fulvovillosum* PERC. . . .		28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.
„ *dicoccoides* var. *Kotschyanum* SCHULZ. .		28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.

[1]) Three different races of this variety were used, #131, #2992, and L 2.
[2]) See page 359 foot-note 2.
[3]) Spikelets of the material used by DE MOL (1924) for which he gave n = 7 were re-examined by FLAKSBERGER (1928) and found to belong to *Triticum dicoccoides*.

GRAMINEAE (continued)	n	2n	
Triticum (continued)			
Triticum dicoccoides var. *spontaneonigrum*	14		PERCIVAL, 1926; MICZYNEKI, 1927.
„ *dicoccoides* var. *spontaneonigrum* FLAKSB		28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.
„ *dicoccoides* var. *spontaneovillosum* . . .	14		MICZYNSKI, 1927.
„ *dicoccoides* var. *Timophaeevi* ZHUK. . .		28	(SVESHNIKOVA), given by FLAKSBERGER, 1928.
„ *dicoccoides* var. (?) .	14		MICZYNSKI, 1927.
„ *durum* [1])		28	SAKAMURA, 1918; DE MOL, 1924; NIKOLAEWA, 1922*a*; KAGAWA, 1926–27.
	14		BLEIER, 1926; TSCHERMAK & BLEIER, 1926; KAGAWA, 1928; SAX, 1922, 1923, 1928; NIKOLAEWA, 1923.
	14	28	SAX, 1921; KIHARA, 1924; WATKINS, 1924.
„ *durum* DESF.	14		KATAYAMA, 1928.
		28	WATKINS, 1928.
„ *durum* var. *affine* . .	14		PERCIVAL, 1926.
„ *durum aglossicon* . .	14		FLAKSBERGER, 1926.
„ *durum* var. *australe* .	14		PERCIVAL, 1926.
„ *durum* DESF. *Blé dur-de Médéah*.		28	KAGAWA 1928.
„ *durum* var. *hordeiforme*	14		PERCIVAL, 1926.
„ *durum* var. *hordeiforme* HOST. [2])	14		VAVILOV & JAKUSHKINA, 1925.
„ DESF. var. *hordeiforme* KÖRN. (*Kubanka*)		28	SAX, 1918, 1922; SAX & GAINES, 1924.
„ *durum* DESF. var. *Kubanka*.	14		AASE & POWERS, 1926.
„ *durum leucurum*. . .	14		-MICZYNSKI, 1927. .
„ *durum* var. *libicum* KÖRN.	14		VAVILOV & JAKUSHKINA, 1925.

[1]) WATKINS (1924) states that his results on somatic counts in varieties of species *durum* and *turgidum*, and on heterotype counts in varieties of the species *durum*, *polonicum*, *turgidum* and *vulgare* agree with those of SAKAMURA and SAX.

[2]) Three different races of this variety were used, #432, #2802 and Y_1.

GRAMINEAE (continued)	n	2n	
Triticum (continued)			
Triticum durum var. *melanopus* AL.	14		VAVILOW & JAKUSHKINA, 1925.
„ *durum* var. *Reichenbachi*. KÖRN.	14		„ „ „ „
„ *polonicum* × *T. vulgare* F_2) = *T. durum*		28	MALINOWSKI (1926), 1929.
„ *erythrospermun*		42	SAPEHIN, 1927.
„ *ferrugineum*		42	„ „
„ *ferrugineum sibiricum*		42	„ „
„ *lutescens*		42	„ „
„ *militurum*		42[1])	„ „
„ *monococcum*	8		PERCIVAL, 1921.
		14	SAKAMURA, 1918; DE MOL, 1924; NIKOLAEWA, 1922*a*, 1923; KAGAWA, 1926, 1927.
	7	14	KIHARA, 1924.
	7		SAX, 1921, 1928; THOMPSON, 1926*b*; BLEIER, 1926.
„ *monococcum* L.	7		AASE & POWERS, 1926; KATAYAMA, 1928.
		14	KAJANUS, 1927.
„ *monococcum* var. *flavescens* [2])	7		PERCIVAL, 1926; MICZYNSKI, 1927.
„ *monococcum* var. *flavescens* KÖRN. [3])	7		VAVILOV & JAKUSHKINA, 1925.
„ *monococcum Hornemanii*.	7		MICZYNSKI, 1927.
„ *monococcum* var. *Hornemanii* KÖRN.	7	14	SAX, 1922.
„ *monococcum* var. *Hornemannii* CLEM.	7		VAVILOV & JAKUSHKINA, 1925.
„ *monococcum Komaba* No. I.		14	KAGAWA, 1926–7.
„ *monococcum Petite Epeautre*		14	KAGAWA, 1926–7.
„ *monococcum* var. *vulgare*	7		PERCIVAL, 1926.
„ *monococcum* var. *vulfare* KÖRN.	7		VAVILOV & JAKUSHKINA, 1925.

[1]) *T. militurum* had as a rule abnormal nuclear division.
[2]) According to MICZYNSKI (1927) this variety from two different sources gave the same number of chromosomes.
[3]) Two different races of this variety were used, #81 and #138.

GRAMINEAE (continued)	n	2n	
Triticum (continued)			
Triticum obtusatum KAJ. . . .		28	KAJANUS, 1927.
„ *orientale* PERC. . . .	14		BLEIER, 1926.
		28	NIKOLAEWA, 1923; WATKINS, 1928.
„ *orientale* var. *notabile*.	14		PERCIVAL, 1926.
„ *persicum*	14	28	(DELAUNAY, 1925) given by VAVILOV & JAKUSHKINA, 1925; (NIKOLAEWA) given by VAVILOV & JAKUSHKINA, 1925.
		28	(NIKOLAEWA) given by ATABEKOR, 1925; NIKOLAEWA, 1923; WATKINS, 1928.
	14		BLEIER, 1926; VAVILOV & JAKUSHKINA, 1925.
„ *persicum* (*Black Persian*)	14		THOMPSON, 1927
„ *persicum* VAV. var. *coeruleum* ZHUK. . .		28	ZHUKOVSKI, 1923.
„ *persicum* VAV. var. *iginosum* ZHUK. . .		28	„ „
„ *persicum* VAV. var. *rubiginosum* ZHUK. .		28	„ „
„ *persicum* VAV. var. *stramineum* ZHUK. .		28	„ „
„ *polonicum* [1])		28	SAKAMURA, 1918; NIKOLAEWA, 1922*a*, 1923; DE MOL, 1924; KAGAWA, 1927.
	14		SAX, 1921, 1923, 1928; WATKINS, 1924; BLEIER, 1926.
	14	28	KIHARA, 1924.
„ *polonicum* L.	14		KATAYAMA, 1928.
		28	WATKINS, 1928.
„ *polonicum* var. *Komaba 2*		28	KAGAWA, 1926–7.
„ *polonicum* var. *levissimum*	14		PERCIVAL, 1926.
„ *polonicum* var. *nigrobarbatum* KÖRN. . .	14		VAVILOV & JAKUSHKINA, 1925.
„ *polonicum* var. *villosum* KÖRN.	14	28	„ „ „

[1]) WATKINS (1924) states that his results on somatic counts in varieties of species *durum* and *turgidum*, and on heterotype counts in varieties of the species *durum*, *polonicum*, *turgidum* and *vulgare*, agree with those of SAKAMURA & SAX.

GRAMINEAE (continued)	n	2n	
Triticum (continued)			
Triticum polonicum L. *villosum* KÖRN.	14	28	SAX, 1922; SAX & GAINES, 1924
„ *pseudocianum*. . . .		42 [1])	SAPEHIN, 1927.
„ *pyramidale* PERC. . .	14		BLEIER, 1926.
		28	WATKINS, 1928.
„ *pyramidale* var. *recognitum*	14		PERCIVAL, 1926.
„ *pyramidale recognitum* (*White Saidi*) .	14		MICZYNSKI, 1927.
„ *spelta*		42	DE MOL, 1924; KAGAWA, 1926–7.
	21		SAX, 1922, 1928.
		44	NIKOLAEWA, 1922*a*.
		44–50	„ 1923.
	21	42	KIHARA, 1924.
„ *spelta* L.		42	WATKINS, 1928.
„ *spelta* var. *album* . .	21		PERCIVAL, 1926; MICZYNSKI, 1927.
„ *spelta* var. *album* AL.[2])	21		VAVILOV & JAKUSHKINA, 1925; STOLZE 1925.
„ *spelta* L. var. *Alstroum*	21		AASE & POWERS, 1926.
„ *spelta* vaf. *Arduinii* MAZZ.	21		VAVILOV & JAKUSHKINA, 1925.
„ *spelta* L var *Bearded Spelt*	21		AASE & POWERS, 1926.
„ *spelta coeruleum* . . .	21		MICZYNSKI, 1927.
„ *spelta* var. *coeruleum* AL	21		VAVILOV & JAKUSHKINA, 1925
„ *spelta* var. *Schenki* KÖRN.	21		„ „ „ ,
„ *spelta* L. var. WHite *Spring Belt*	21		AASE & POWERS, 1926.
(„ *dicoccum* × *T. vulgare* F_2) = *T. spelta* .		42	MALINOWSKI (1926), 1929.
(„ *polonicum* × *T. vulgare* F_2) = *T. spelta*.		42	„ „ „
„ *sphaerococcum* PERCIV.		42	WATKINS, 19281
„ *sphaerococcum* var. *tumidum*	21		PERCIVAL, 1926.

[1]) Of a number of soft wheats studied *T. pseudocianum* showed the highest percentage (1 %) of abnormalities in division (1 or 2 univalents).

[2]) Two different races of this variety were used. ♯123 and ♯3367.

GRAMINEAE (contniued)	n	2n	
Triticum (continued)			
Triticum Thandar REUT. . . .			(SHEPELJEVA), given by FLAKSBERGER, 1926.
„ *turgidum* [1])		28	SAKAMURA, 1918; NIKOLAEWA, 1922*a*, 1923; DE MOL, 1924.
	14		SAX, 1921, 1928; BLEIER, 1926.
	14	28	KIHARA, 1924; WATKINS, 1924.
„ *turgidum* L.		24	WATKINS, 1928.
„ *turgidum* L. var. *Alaska*	14		AASE & POWERS, 1926.
„ *turgidum* var. *buccale*	14		THOMPSON, 1926*b*.
„ *turgidum dinurum* (Rivet)	14		MICZYNSKI, 1927.
„ *turgidum* var. *Rivet* .	14		WATKINS, 1927*b*.
„ *turgidum gentile* . .	14		PERCIVAL, 1926.
„ *turgidum* var. *iodurum* KÖRN. (Rivet) .		28	WATKINS, 1925.
„ *turgidum* var. *iodurum*	14		KAGAWA, 1926-7.
„ *turgidum iodurum* (Blue Cone)	14		MICZYNSKI, 1927.
„ *turgidum* var. *Komaba* No. I	14		KAGAWA, 1927-6.
„ *turgidum* var. *lusitanicum*	14		PERCIVAL, 1926.
„ *turgidum* var. *lusitanicum* KÖRN. [2]) .	14		VAVILOV & JAKUSHKINA, 1925.
„ *turgidum* var. *Plinianum* KÖRN. . . .	14		„ „ „ „
„ *turgidum* L. var. *pseudocervinum* KÖRN. (Alaska)		28	SAX, 1922; SAX & GAINES, 1924
„ *villosum*	7		BLEIER, 1928*b*.
„ *vulgare* [1])	8		GOLINSKI, 1893; KOENICKE, 1896; NAKAO, 1911; BALLY, 1912, 1919; (DUDLEY), given by EAST, 1915; PERCIVAL, 1921.
	8	16	OVERTON, 1893*a*, *b*.

[1]) WATKINS (1924) states that his results on somatic counts in varieties of species *durum* and *turgidum* and on heterotype counts in varieties of the species *durum*, *polonicum*, *turgidum* and *vulgare* agree with those of SAKAMURA and SAX.

[2]) Two different races of this variety were used, #3326 and #3362.

GRAMINEAE (continued) *Triticum* (continued)	n	2n	
	21	42	SAKAMURA, 1918; KIHARA, 1924; (NIKOLAEWA), given by VAVILOV & JAKUSHKINA, 1925.
	21		DE MOL, 1924; SAX, 1921, 1922, 1928; BLEIER, 1926; WATKINS, 1924.
		42	KAGAWA, 1926-7, 1927.
		42–44	NIKOLAEWA, 1923.
Triticum vulgare (25 forms) . .	21		PERCIVAL, 1926.
„ *vulgare* HOST. . . .	21		KATAYAMA, 1921.
		42	WATKINS, 1928.
„ *vulgare albidum* (Starling)	21		MICZYNSKI, 1927.
„ *vulgare* VILL. var. *albidum* KÖRN. (Amby)		42	SAX & GAINES, 1924.
„ *vulgare* var. *albidum* KÖRN.	21		THOMPSON, 1926*a*.
„ *vulgare* var. *albidum* KÖRN. (Swedish Iron)		42	WATKINS, 1925.
„ *vulgare* „Chul". . . .	21		THOMPSON, 1928.
„ *vulgare* VILL. var. *Bluestem*	21		AASE & POWERS, 1926.
„ *vulgare* var. *erythroleucum* KÖRN.	21		VAVILOV & JAKUSHKINA, 1925.
„ *vulgare* var. *erythrospernum* KÖRN.[1]) .	21		VAVILOV & JAKUSHKINA, 1925.
		42	ZHUKOVSKII, 1923; NIKOLAEWA, 1924.
„ *vulgare erythrospermum* (Ribeiro) . . .	21		MICZYNSKI, 1927.
„ *vulgare erythrospermum* (Usher's Red).	21		„ „
„ *vulgare ferrugineum* (Molawska)	21		„ „
„ *vulgare* var. *ferrugineum* AL.[2])	21		VAVILOV & JAKUSHKINA, 1925.
„ *vulgare* var. *fuligonosum Alpaca*[3]) . . .	21		„ „ „ „
„ *vulgare Horogi* VAV. .	21		„ „ „ „

[1]) Five different races of this variety were used, #2386, #2823, #3379, #3381 and A-139. (VAVILOV & JAKUSKINA, 1925).
[2]) Three different races of this variety were used, #5, #127, and #2406.
[3]) Four different races of this variety were used, I, II, IVand (O E.).

GRAMINEAE (continued)	n	2n	
Triticum (continued)			
Triticum vulgare HOST. *Komamaba* 3	21		KAGAWA, 1928.
„ *vulgare* VILL. var. *Hussar*	21		AASE & POWERS, 1926.
„ *vulgare lutescens* AL.[1])	21		VAVILOV & JAKUSHKINA, 1925.
„ *vulgare lutescens* KÖRN. (Marquis) . .		42	SAX, 1922; SAX & SAX, 1924; SAX & GAINES, 1924.
„ *vulgare lutescens* KÖRN. (Yeomen) .		42	WATKINS, 1925.
„ *vulgare lutescens* (Trump)	21		MICZYNSKI, 1925.
„ *vulgare*, Marquis (dwarf)	20		THOMPSON, 1922.
„ *vulgare* VILL. var. *Martin*	21		AASE & POWERS, 1926.
„ *vulgare meridionale* .	21		MICZYNSKI, 1927.
„ *vulgare militurum* (*Dividenden*) . . .	21		„ „
„ *vulgare militurum* (*Standard Red*) . .	21		„ „
„ *vulgare „Pusa 12"* .	21		THOMPSON, 1928.
„ *vulgare pyrothrix* (*Hallet Imp. Pedigree*) .	21		MICZYNSKI, 1927.
„ *vulgare* VILL. var. *Ridit*	21		AASE & POWERS, 1926.
„ *vulgare* var. Swedish *Iron*	21		WATKINS, 1927*b*.
„ *vulgare* VILL. var. *Triplet*	21		AASE & POWERS, 1926.
„ *vulgare Utsunomiuya* Agr. Coll. No. I. . .	21		KAGAWA, 1928.
„ *vulgare* var. *Yeoman* .	21		WATKINS, 1927*b*.
„ Speltoids:			
Type A heterozygous speltoids	$19+1_1+1_3$	42	HUSKINS, 1928*a*.
Type A homozygous speltoids	$19+1_4$	42	„ „
Type B heterozygous speltoids	$20+1_1$	41	„ „
		41	„ 1928*b*

[1]) Two different races of this variety were used, #188 and #2718.

GRAMINEAE (continued)	n	2n	
Triticum (continued):			
Type B homozygous speltoids		40	HUSKINS, 1928*a*.
Type B homozygous speltoids	$20+1_1$ or $19+1_3$	41	„ „
		41	„ 1928*b*.
Type C heterozygous speltoids	$20+1_3$	43	„ 1928*a*.
		43	„ 1928*b*.
Type C homozygous speltoids		44	„ 1928, 1928*b*.
Triticum Hybrids:			
„ *aegilipoides boeoticum* × *T. dicoccum* . .	$\frac{7+1_1}{2}$ $\frac{1_3\text{-}3_3+6,4,3,+6_1,7_1}{2}$		KIHARA & NISHIYAMA, 1928.
„ *dicoccum* × *T. monococcum*	$\frac{7+1_1}{2}$ $\frac{1_3\text{-}3_3+6,4^{1)},3+6_1,7_1}{2}$		„ „ „
„ *dicoccum* × *T. vulgare* (spelta type) . .		42	MALINOWSKI, 1925; (1926) 1929.
„ *dicoccum* SCHÜBL. × *T. vulgare* HOST. F_2		28, 42 [2])	MALINOWSKI, 1926.
„ *dicoccum* var. *farrum* × *T. vulgare* var. Marquis F_2 [3]) . . .	$\frac{14+0_1-4_1}{2}$ 15–17 $\frac{15-17+6_1,4_1,3_1}{2}$		THOMPSON & HOLLIGSHEAD, 1927. SAX, 1922.
, *durum* × *T. vulgare*	$\frac{14^{4)}+7_1}{2}$		KIHARA & NISHIYAMA, 1928.

[1]) Sometimes a bi-bivalent ($1_{II}+1_{II}$), not a tetravalent, appeared in the complex
[2]) F_2 plants of the *dicoccum* type had 28, and those of the *vulgare* type had 42 chromosomes.
[3]) Of 28 F_2 hybrids, 24 had 14 bivalents and were dicoccum-like and had 15—17 bivalents, and were intermediate in characters.
[4]) Rarely 1—2 trivalents were seen.

GRAMINEAE (continued)	n	2n	
Triticum Hybrids (continued):			
Triticum durum × *T. vulgare* F_1	$14+\frac{7_{I}}{2}$	35	TOCHINAI & KIHARA, 1927.
„ *durum* × *T. vulgare* F_2		30, 31, 33, 37, 38,	„ „ „
„ *durum* × *T. vulgare* F_3		28, 29, 37, 39, 40	„ „ „
„ *durum* × *T. vulgare* F_4 (durum type) . . .	14, $14+1_{I}$ $14+\frac{2_{I}}{2}$ $14+\frac{7_{I}}{2}$	28, 29	„ „ „
„ *durum* × *T. vulgare* F_4 (vulgare type) . . .	$16+\frac{2\text{–}3_{I}}{2}$ $19+1_{I}$. $20+1_{I}$	34–37, 39, 41	„ „ „
„ *durum* (Kubanka) × {*T. vulgare* (Marquis) × *T. durum* (Kubanka) F_1} . .	$14+\frac{0\text{–}5_{I},7_{I}}{2}$	28–33, 35	SAX, 1928.
„ *monococcum* × *T. turgidum* var. *buccale* .	$3\text{–}7+\frac{7_{I},9_{I},11_{I},13_{I},15_{I}}{2}$		THOMPSON, 1926*b*.
„ *monococcum* × *T. turgidum pseudocervinum* KORN (Alaska)	$7+\frac{7_{I}\,14_{I}}{2}$	21	SAX, 1922.
„ *persicum* (Black Persian) × *T. dicoccum*[1])	14		THOMPSON, 1927.
„ *polonicum* × *T. spelta* [2])		40	KIHARA, 1924.
„ *polonicum* × *T. spelta* F_4		42, ca 42	TOCHINAI & KIHARA, 1927.
„ *polonicum* × *T. vulgare* F_3 (dicoccum type)		28	MALINOWSKI, 1925, (1926), 1929.

[1]) Of the hybrid *Triticum persicum* × *T. vulgare*, THOMPSON (1927) says there were lagging chromosomes in the pentaploid forms.
[2]) Two individuals (2-8-31) and (3-3-3-6) arose from this cross with 40 chromosomes that were dwarf and partially dwarf.

GRAMINEAE (continued)	n	2n	
Triticum Hybrids (Continued)			
Triticum polonicum × *T. vulgare* F_2 (spelta type)		42	MALINOWSKI, 1925, (1926), 1929,
„ *polonicum* × *T. vulgare* F_2 (durum type)		28	MALINOWSKI, (1926) 1929.
„ *polonicum* L. × *T. vulgare* HOST. F_3 [1]) .		28	MALINOWSKI, 1926.
D_{2g} [2]) (*Triticum polonicum* × *T. spelta*) × *T. spelta*	$20+1_I$	41	NISHIYAMA, 1928*a*.
D_{2f} [2]) (*Triticum polonicum* × *T. spelta*) × *T. spelta* . . .	$20+1_I$	41	„ „
Triticum spelta × D_{2g}. (*T. polonicum* × *T. spelta*)	$20+1_I$	41	NISHIYAMA, 1928*a*
„ *spelta* × D_{2f} (*T. polonicum* × *T. spelta*)	$20+1_I$	41	„ „
„ *spelta* × *T. monococcum* [3])	$0\text{-}5+\frac{28_I\text{-}18_I}{2}$		MELBURN & THOMPSON, 1927.
„ *spelta* × *T. aegilipoides boeoticum* . . .	$7+\frac{14_I}{2}$, $10+\frac{8_I, 1_3\text{-}3_3}{2}$ $+7, 5, 4, +\frac{11_I, 14_I, 15_I}{2}$		KIHARA & NISHIYAMA, 1928
„ *turgidum* var. *buccale* × *T. dicoccum* . .	14		THOMPSON, 1926*b*.
„ *turgudum* × *T. compactum* F_4		42, ca 42	TOCHINAI & KIHARA, 1927.
{ „ *turgidum* (Rivet) × *T. vulgare* (Iron) } × *T. turgidum* (Rivet)	14–21		WATKINS, 1927*a*.
„ *turgidum* (Rivet) × *T. vulgare* Swedish Iron or Yeoman) F_2 . .			

[1]) Root-tips of plants of 4 types of the F_3 generation, i.e., *polonicum-*, *dicoccum* and *spelta*-like plants, showed 28 chromosomes.

[2]) D_{2g} and D_{2f} refer to the dwarf plants obtained by KIHARA (1924) from *T. polonicum* and *T. spelta*.

[3]) In the homoeotypic division 4–13 lagging chromosomes were seen.

GRAMINEAE (continued)	n	2n	
Triticum Hybrids (continued):			
Type 1 [1]) round glumed *turgidum*	28		WATKINS, 1927*b*.
Type 2 *vulgare*	42		„ „
Type 3. intermediate types 1 and 2	28–42		„ „
Type 4. heterozygous round glumed *turgidum*	28		„ „
Type 5. heterozygous speltoid	42		„ „
Type 6. intermediates between types 4 and 5	28–42		„ „
Type 7. *turgidum*	28		„ „
Type 8. *speltoid*	42		„ „
Type 9. intermediates between types 7 and 8	28–42		„ „
{*Triticum vulgare* (*Marquis*) × × *T. durum* (*Kubanka*) F_1} × *T. durum* (*Kubanka*)	$14+\frac{0_I\text{-}6_I}{2}$	28–35[2])	SAX, 1928.
„ *vulgare* (*Pusa* 12 × *Chul*) F_1	$19\text{-}20+\frac{1_I\text{-}2_I}{2}$		THOMPSON, 1928.
„ (*Chul* × *Marquis*) normal & dwarf	20+,21+[3])	42	GOULDEN, 1926.
„ (*Kota* × *Marquis*) normal & dwarf	21 [4])	42	GOULDEN 1926.
„ *vulgare* (*Marquis*) × *T. durum Jumillo* F_2 [5])		14,15,16-19,20,21	THOMPSON, 1925.
„ „*Marquillo*" (*Marquis* × *Jumillo*)	14		ELDERS, 1927.

[1]) The *turgidum* and *vulgare* types were found not only to owe their differences to difference in chromosome number but to factor differences also.

[2]) Only 4 of 151 plants had 35 chromosomes, while 71 plants had 28 chromosomes.

[3]) Though no attempt was made to count the chromosomes in heterotypic plates, there was usually one lagging chromosome (2 in one case) present in both normal and dwarf plants.

[4]) Most of the division figures showed no irregularities, but occasionally in dwarf plants, a cell showed a lagging chromosome.

[5]) THOMPSON found in F_2 + F_3 some plants resembling *T. durum* and some like *T. vulgare* and some intermediate. The chromosome numbers corresponded to the types and forms with intermediate numbers and intermediate appearance tended to be eliminated in F_3.

GRAMINEAE (continued)	n	2n	
Triticum Hybrids (Continued)			
Triticum „H-44-24" (*Marquis* × *Yaroslav Emmer*)	$\frac{28}{2}$ [1])		ELDERS, 1927.
(„ *vulgare militurum* 00274 × *T. durum melanopus* 00122)F_2	$\frac{16+4_I}{2}$		SAPEHIN & SAPEHIN, 1925 [2]).
(„ *vulgare militurum* 00274 × *T. durum melanopus* 00122)F_6	$\frac{16+4_I}{2}$		„ „ „ „
(„ *vulgare militurum* 00274 × *T. durum melanopus* 00122)F_7 [3])	$\frac{5+14_I}{2}$, $\frac{16+10_I}{2}$		„ „ „ „
„ *vulgare militurum* 00274 × *T. durum melanopus* 00/22 (7 types)	21		SAPEHIN, 1928.
„ *vulgare militurum* 00274 × *T. durum melanopus* 00/22 (type 5)	$\frac{16+4_I}{2}$		„ „
„ *dicoccum* × (*T. vulgare* 1 × *T. dicoccum*			
„ *durum* × (*T. vulgare* 1 × *T. durum* . . .			
„ *durum* × *T*(. *vulgare* 2 × *T. durum*) . . .	$\frac{7+1_I\text{-}7_I}{2}$ [4])		THOMPSON & CAMERON, 1928.
„ *vulgare* × (*T. vulgare*			

[1]) Lagging chromosomes were found in the metaphase and anaphase stages of pollen-mother-cell division.

[2]) Of a number of crosses between forms of *Triticum albidum*, *T. erythrospernum*, *T. ferrugineum*, *T. lutescens*, *T. milutirum* and *T. pseudocianum*, only one cross of a form of *T. ferrugineum* and a form of *T. erythrospermum* showed 41 chromosomes. (SAPEHIN, 1927).

[3]) A second type showed no regular number of bivalents and univalents and division was very irregular.

[4]) In the gametes of these hybrids it was far more frequent to find 0 univalents than to find 7, and gametes with an intermediate number of univalents (1—6) were in much smaller propertion than expected.

GRAMINEAE (continued)	n	2n	
Triticum Hybrids (continued)			
1 × *T. durum*) . .			
Triticum vulgare × (*T. vulgare* 1 × *T. dicoccoides*) .			
„ *vulgare* 2 × (*T. vulgare* 2 × *T. durum*) .			
„ *vulgare* var. *albidum* KÖRN. × *Secale cereale* var. *Prolific* .	28 [1]		THOMPSON, 1926*a*.
(„ *vulgare* var. *albidum* KÖRN. × *Secale cereale* var. *Prolific*) × *T. vulgare* var. *albidum* KÖRN. . .	$21+3_1$ $\overline{2}$		„ „
„ *vulgare* var. *erythrospermum* × *Secale cereale* F_1		28	NIKOLAEWA, 1924..
„ *vulgare* var. *erythospermum* × *Secale cercale* F_2		42-44, 50 [2]	„ „
„ *vulgare* × *Aegilops ovata*	ca. 12		BALLY, 1919
„ *vulgare* var. *Red Hassar* × *Aegilops cylindrica*	$7+21_1$ $\overline{2}$		GAINES &·AASE, 1926.
„ *vulgare* (*Komaba* No. 3) × *Aegilops cylindrica* HOST.	$7+21_1$ $\overline{2}$	36	KAGAWA, 1928.
„ *durum* (*Ble' dur de Médéah*) × *Aegilops ovata* L. F_1		28	„ „
AEGILOPS [3])			
Section Polyeides ZHUK.			
Aegilops biuncialis VIS. . . .	14		SOROKINA, 1928.
		28	SCHIEMANN, 1928*b*.

[1]) Occasionally 25, 26 or 27 chromosomes were counted and then mating of 1, 2 and rarely 3 pairs took place. An F_3 plant showed 17 + 2_1 andan F_4 plant showed 17 chromosomes, among which no univalents were expected.

[2]) One plant of 6 had 50 chromosomes in the root-tips and the remainder had 42—44.

[3]) Arrangement under sections is according to „Berliner Herbar".

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
Aegilops ovata	16	32	BALLY, 1912, 1919.
	14		PERCIVAL, 1923; AASE & POWERS, 1926; TSCHERMAK & BLEIER, 1926; BLEIER. 1928*b* SAX, 1928, (1926) 1929.
	14	28	KIHARA, 1924; VAVILOV & JAKUSHKINA, 1925.
„ *ovata* L.	14		PERCIVAL, 1926.
	14	28	KAGAWA, 1928.
„ *ovata* var. *anatolica* .	7 [1])	14	SCHIEMANN, 1928*a*, *b*.
„ *ovata* ssp. *gibberosa* ZHUK.	14		SOROKINA, 1928.
„ *ovata* ssp. *planiuscula* ZHUK.	14		„ „
„ *ovata* var. *typica* . . .	14	28	SCHIEMANN, 1928*a*, *b*.
„ *ovata* ssp. *umbonata* ZHUK.	14		SOROKINA, 1928.
„ *triaristata*		28, 42	SCHIEMANN, 1928*b*.
„ *triaristata* ssp. *contorta* ZHUK.	14		SOROKINA, 1928.
„ *triaristata* ssp. *recta* ZHUK.	14		„ „
Section S u r c u l o s a ZHUK.			
Aegilops triuncialis	14		AASE & POWERS, 1926; SCHIEMANN, 1928*a*.
	14	28	SCHIEMANN, 1928*b*.
„ *triuncialis* L.	14		PERCIVAL, 1926; KAGAWA, 1928; VAVILOV & JAKUSHKINA, 1925.
		28	EMME, 1924.
„ *triuncialis* ssp. *brachyathera* BOISS. . . .	14		SOROKINA, 1928.
„ *triuncialis* ssp. *Kotschyi* BOISS.	14		„ „
„ *triuncialis* ssp. *persica* (BOISS.) ZHUK. . .	14		„ „
„ *triuncialis* ssp. *typica* ZHUK.	14		„ „
Section C y l i n d r o p y r u m (JAUB. et SP.) ZHUK.			
Aegilops cylindrica	7		PERCIVAL, 1923.
	14		SAX & SAX, 1924; GAINES &

[1]) This number was found in material from Angora as well as from Taurus.

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
			AASE, 1926; SAX, 1928, (1926) 1929.
		28	SCHIEMANN, 1928*a*, *b*.
Aegilops cylindrica HOST. . .	14		AASE & POWERS, 1926; BLEIER 1928*b*.
		28	EMME, 1924.
	14	28	KAGAWA, 1928.
„ *cylindrica* ssp. *aristulata* ZHUK.	14		SOROKINA, 1928.
Section Vertebrata ZHUK.			
Aegilops squarrosa [1])		28	KIHARA, 1924.
	14		AASE & POWERS, 1926.
„ *squarrosa* L.	7		PERCIVAL, 1926.
		28	EMME, 1924.
„ *squarrosa* CAR. . . .	14		KAGAWA, 1928.
„ *squarrosa* ssp. *Meyeri* GRISEB.	7		SOROKINA, 1928.
„ *squarrosa* ssp. *typica* ZHUK.	7		„ „
Section Conopyrum (JAUB. et SP.) ZHUK.			
Aegilops caudata L.	7		BLEIER, 1928*b*.
„ *caudata* ssp. *dichasians* ZHUK.	7		SOROKINA, 1928.
„ *caudata* var. *polyathera*		14	SCHIEMANN, 1928*a*, *b*.
„ *comosa* SIBTH. et SM.	7		SOROKINA, 1928.
„ *comosa* var. *subventricosa* (= *A. Heldreichii*)		14	SCHIEMANN, 1928*a*, *b*.
Section Gastropyrum (JAUB. et SP.) ZHUK.			
Aegilops ventricosa	14		PERCIVAL, 1923; SCHIEMANN, 1928*a*, *b*.
		28	KIHARA, 1924.
„ *ventricosa* TAUSCH. .	6		BALLY, 1919.
	14		PERCIVAL, 1926; BLEIER, 1928*b*
		28	EMME, 1924.
„ *ventricosa* COSS. . . .	14		VAVILOV & JAKUSHKINA, 1925.
„ *ventricosa sapocomosa* COSS.	14		SOROKINA, 1928.
Section Sitopsis (JAUB. et SP.) ZHUK.			
Aegilops Aucheri ssp. *virgata* ZHUK.	7		SOROKINA, 1928.

[1]) PERCIVAL (1926) explains that *A. squarrosa* has been applied to *A. ventricosa* TAUSCH; *A. candata* L., *A. cylindrica* HOST., as well as to the Asiatic *A. squarrosa*.

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
Aegilops bicornis (FORSK.) JAUB et SP.	7		SOROKINA, 1928.
„ *longissima* (SCHW. et MUSCHL.) EIG. . . .	7		„ „
„ *speltoides*		14	KAGAWA, 1926.
„ *speltoides* TAUSCH. . .	7		PERCIVAL, 1926'
	7	14	KAGAWA, 1928.
„ *speltoides* var. *ligustica* EIG.	7	14	SCHIEMANN, 1928*a*, *b*.
„ ssp. *ligustica* FIORI .	7		SOROKINA, 1928.
„ *speltoides* ssp. *submutica* ZHUK.	7		„ „
„ *speltoides* var. *typica* EIG. (= *Aucheri*) .	7	14	SCHIEMANN, 1928*a*, *b*.
Section Polyploides ZHUK.			
Aegilops crassa BOISS.		28	EMME, 1924.
	21		PERCIVAL, 1926.
„ *crassa* ssp. *trivalis* ZHUK.	21		SOROKINA, 1928.
„ *crassa* ssp. *Vavilovi* ZHUK.	ca. 21[1])		„ „
„ *turcomanica* ROSHEV	ca. 21		„ „
Section (?)			
Aegilops triticoides		28	KIHARA, 1924.
„ *triticoides* REQ. . . .		28	EMME, 1924.
„ *uniaristata*	14		SCHIEMANN, 1928*a*, *b*.
„ *variabilis* EIG. [2]) . .	14		SOROKINA, 1928.
„ – „*Bastardtyp*" (*triuncialis* × *triaristata*) .	14	28	SCHIEMANN, 1928*b*.
Aegilops Hybrids:			
„ *cylindrica* × *Triticum durum*	$\frac{35_{I}}{2}$		BLEIER, 1928*b*.
„ *cylindrica* × *Triticum spelta*	$\frac{7+21_{I}}{2}$		„ „
„ *cylindrica* × *Triticum vulgare* F_2	$\frac{7+21_{I}}{2}$		SAX (1926), 1929.
„ *ovata* × *A. caudata* L.	$\frac{7\text{-}10+7_{I}\text{-}1_{I}}{2}$		BLEIER, 1928*b*.

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1) A satellite appeared in this species.

2) Eight samples were investigated.

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
„ *ovata* × *Triticum dicoccum* F_1	$\frac{28_I}{2}$		SAX, 1928.
„ *ovata* × *Triticum dicoccum* F_2	$14+14_I, 21_I$		„ „ „
(„ *ovata* × *Triticum dicoccum* F_1) × *Triticum dicoccum*	$14+14_I$		„ „ „
„ *ovata* × *Triticum dicoccum* var. *Ajar* [1] .	ca. $\frac{7+21_I}{2}$	28	PERCIVAL, 1926.
Aegilotricum (*forma fertilis* No. 1) – *Aegilops ovata* × *Triticum dicoccoides*	28 [2]	ca. 56	TSCHERMAK & BLEIER, 1926.
„ (*forma fertilis* No. 2) – *Aegilops ovata* × *Triticum durum*	28 [2]	ca. 56	„ „ „ „
„ No. 1 × *Aegilotricum* No. 2 (F_3) . .	28		„ „ „ „
Aegilops ovata × *Triticum durum*	$\frac{28_I}{2}$		BLEIER, 1928*b*.
„ *ovata* × *Triticum monococcum*	$\frac{1\text{-}5+19_I\text{-}11_I}{2}$ or $\frac{21_I}{2}$		„ „
„ *ovata* × *Triticum vulgare* (Starling) [3] . .	$\frac{35_I}{2}$	35	PERCIVAL, 1926.
„ *ovata* × *Triticum vulgare* F_1	$\frac{35_I}{2}$		BLEIER, 1928*b*.
„ *ovata* × *Triticum vulgare* F_2	$\frac{20+6_I}{2}$	50	„ „
„ *ovata* × *Triticum vil-*			

[1]) In these hybrids pairing of chromosomes was very loose in metaphase of the heterotypic division.

[2]) This number was found in plants of F_5 and F_6 generations.

[3]) In these hybrids pairing of chromosomes was very loose in metaphase of the heterotypic division.

GRAMINEAE (continued)	n	2n	
AEGILOPS (continued)			
losum	$\frac{21_1}{2}$		BLEIER, 1928*b*.
Aegilops ovata × (*Aegilops ovata* × *Triticum durum*)	$14+\frac{14_1}{2}$		„ „
„ *ventricosa* × *Triticum villosum*	4+		„ „
Agopyrum repens	21		STOLZE, 1925.
HORDEUM			
Vulgare Groups:			
Hordeum Caput-Medusae (L.) HACKEL		14	GRIFFEE, 1927.
„ *deficiens*		14	„ „
„ *deficiens deficiens* . .		14	TANJI, 1925.
„ *deficiens nudideficiens*.		14	„ „
„ *deficiens steudelii* . .		14	GRIFFEE, 1925.
„ *deficiens tridax* . . .		14	TANJI, 1925.
„ *distichon*	7		NAKAO, 1911.
„ *distichon nigricans* .		14	TANJI, 1925.
„ *distichon nigrilaxum* .		14	„ „
„ *distichon palmella* . .		14	„ „
„ *distichon* var. *Svanhals*		14	GRIFFEE, 1925.
„ *distichum*		14	KIHARA, 1924
„ *distichum* L. var. *erectum* SCHÜBL. . . .	7		STOLZE, 1925.
„ *distichum* L. var. *zeocrichum* L.		14	„ „
„ *intermedium*		14	GRIFFEE, 1927.
„ *intermedium cornutum*		14	„ 1925.
„ *intermedium Laxtoni*		14	TANJI, 1925.
„ *intermedium mortoni*		14	„ „
„ *maritimum*		14	„ „
„ *maritimum* WITH. . .		14	GRIFFEE, 1927.
„ *spontaneum*	7	14	v. UBISCH. 1921.
		14	TANJI, 1925; GRIFFEE, 1927.
„ *spontaneum* C. KOCH.	7	14	STOLZE, 1925.
	7		AASE & POWERS, 1926.
„ *vulgare* [1])	7	14	v. UBISCH, 1921; KIHARA, 1924; GRIFFEE, 1927.

[1]) For list of varieties of *Hordeum vulgare* given by TANJI, 1925, and EMME, 1925, see previous list (GAISER, 1926). Thirty-nine varieties have a diploid number of 14.

GRAMINEAE (continued)	n	2n	
Hordeum (continued)			
Hordeum vulgare var. *Manchuria*		14	GRIFFEE, 1925.
„ *vulgare* L. var. *Winter Club*.	7		AASE & POWERS, 1926.
Jubatum Group:			
Hordeum jubatum		ca. 14	TANJI, 1925.
„ *jubatum* L.		14	AASE & POWERS, 1926.
	14	28	GRIFFEE, 1927.
„ *murinum*.		14	TANJI, 1925.
„ *murinum* L.	7	14	STOLZE, 1925.
	14		AASE & POWERS, 1926. GRIFFEE, 1927.
Nodosum Group:			
Hordeum nodosum		14	TANJI, 1925.
„ *nodosum* L.	21	42	GRIFFEE, 1927.
CYPERACEAE			
ERIOPHORUM [1])			
Section Vaginata.			
Eriophorum vaginatum L. . .	29		HÅKANSSON, 1928.
Section Phyllanthela			
Eriophorum polystachyum L. .	29		„ „
SCIRPUS [1])			
Section Taphrogeton			
Scirpus radicans SCHKUHR. . .	28		„ „
„ *silvaticus* L.	31		„ „
Section Bulboschoenus			
Scirpus maritimus L.	52		„ „
Section Schoenoplectus			
Scirpus lacustris L.	21		„ „
„ *Tabernaemontani* GMEL	21		„ „
Section Blysmus			
Scirpus compressus (L.) PERS. .	22		„ „
Section Isolepis			
Scirpus setaceus L.	13		HÅKANSSON, 1928.
Section *Heleocharis*			
Scirpus multicaulis SM. . . .	10		„ „
„ *paluster* L.	8		PIECH, 1924, 1928*a*, *b*.
„ *palustris* L.	19		HÅKANSSON, 1928.
„ *uniglumis* LINK. . . .	23		„ „
	16		PIECH, 1928*a*, *b*.
Section (?)			
Scirpus acutus MUHL. f. *condensatus* (FARWELL) FERN	20		HICKS, 1928.

[1]) Classification under sections is according to KÜKENTHAL (1909).

CYPERACEAE (continued)	n	2n	
Scirpus (continued)			
Scirpus americanus PERS. . .	38		HICKS, 1928
„ *americanus* PERS. (irregular form)	50–64		„ „
„ *atrocinctus* FERN. . .	34		„ „
„ *atrovirens* MUHL. . . .	25–30		„ „
„ *campestris* BRITTON var. *fernaldi* (BICKNELL) BARTLETT . .	ca. 55		„ „
„ *campestris* var. *paludosus* (A. NELSON) FERN	55–57		„ „
„ *cyperinus* (L.) KUNTH var. *pelius* FERN . .	33		„ „
„ *fluviatilis* (TOIR.)GRAY	55		„ „
„ *georgianus* HARPER (*S. atrovirens* MUHL. var. *georgianus* (HARPER) FERN.).	28		„ „
„ *heterochaetus* CHASE .	18		„ „
„ *longii* FERN..	34		„ „
„ *olneyi* GRAY	39		„ „
„ *robustus* PURSH. . . .	53–55		„ „
„ *rubrotinctus* FERN. . .	33		„ „
„ *validus* VOHL.	21		„ „
CAREX [1])			
Subgenus Primocarex			
Section Microcephalae			
Carex capitata SOLAND . . .	25		HEILBORN, 1928a
Subgenus Vignea			
Section Stenorhynchae			
Carex conferta HOCHST. . . .	26		„ 1928a
„ *crus-corvi* SHUTTL. . . .	26		„ „
Section Tenuiflorae			
Carex tenuiflora WAHLENB. . .	31 [2])		„ „
Section Elongatae			
Carex remota L.	31		„ „
Subgenus Eucarex			
Section Acutae			
Subsection Cryptocarpae			
Carex salina WAHLENB. var. *Kategatensis* (FR.) ALMQ. . .	42 [3])		„ „

[1]) Classification under sections is according to KÜKENTHAL, 1909.
[2]) It is possible that 32 is the correct number.
[3]) It is possible that 42 is the correct number.

CYPERACEAE (continued)	n	2n	
Section Limosae			
Carex magellanica LAM. . . .	29		HEILBORN, 1928*a*.
Section *Frigidae*			
Subsection Fuliginosae			
Carex atrofusca SCHKUHR. . .	18		„ „
Section Hymenochloenae			
Subsection Longirostres			
Carex silvatica	29		„ „
Section Spirostachyae			
Carex pulchella LÖNNR. . . .	35		„ „
Section Physocarpae			
Subsection Vesicariae			
Carex laevirostris FR.	41		„ „
„ *saxatilis* L.	probably 40 (41?)		„ „
Section (?)			
Carex aquatilis	ca. 37		STOUT, 1913.
	> 40		VUCKOVIC, 1928.
„ *Hornschuchiana* × *Oederi*	34–40 [1]		HEILBORN, 1928*a*.
PRINCIPES			
PALMAE			
Phoenix dactylifera.		28	NĚMEC, 1910*a*.
Trachycarpus excelsus WENDL. var. *Fortunei* MAK.	18 [2]		SINOTO 1928*a*.
Pritchardia filamentosa		24	NEMEC, 1910*a*.
Chamaedorea corallina KARST. .	12–14		SÖDERBERG, 1919.
„ *glaucophylla*. . .	13		SÜSSENGUTH, 1920.
„ *Karwinskiana* . .		26	„ 1921.
„ *Sartorii*.	6–7		„ 1920.
Cocos nucifera LINN..	16		SANTOS, 1928.
Nipa fruticans	8		RADERMACHER, 1925.
SPATHIFLORAE			
ARACEAE			
ANTHURIUM [3]			
Section I. Tetraspermium SCHOTT.			
Anthurium scandens (AUBL.) ENGL.	24	48	GAISER, 1927

[1]) In most cases 5—8 diminutive (univalent) chromosomes were counted among these, though there may have been as many as 16 univalents.

[2]) A pair of unequal chromosomes was distinguishable.

[3]) The following species are classified under sections according to ENGLER & PRANTL.

ARACEAE (continued)	n	2n	
ANTHURIUM (continued)			
Anthurium violaceum var *leucocarpum*	16		CAMPBELL, 1905.
Section II. Gymnopodium ENGL.			
Anthurium gymnopus GRISEB.		ca. 30	GAISER, 1927.
Section III. Porphyrochitonium SCHOTT.			
Anthurium Scherzerianum SCHOTT (var. *grandiflorum*)	ca. 15	ca. 30	GAISER, 1927.
	16	30–32	HAASE-BESSEL, 1928
Section IV. Pachyneurium SCHOTT			
Anthurium acaule (JACQ.) SCHOTT	15	30	GAISER, 1927.
„ *recusatum* SCHOTT	ca. 15	ca. 30	„ „
„ *Hookeri* KUNTH	ca. 15	ca. 30	„ „
„ *crassinervium* (JACQ SCHOTT	ca. 30	ca. 60	„ „
„ *tetragonum* (HOOK.) SCHOTT	15	30	„ „
„ *maximum* (DESF.) ENGL.	ca. 15	ca. 30	„ „
„ *hacumense* ENGL.		ca. 30	„ „
„ *grandifolium* (JACQ.) KUNTH		ca. 30	„ „
„ *cordatum* (WILLD.) G. DON.		ca. 30	„ „
„ *Brownii* MAST.		ca. 30	„ „
Section VI. Lepthanthurium SCHOTT			
Anthurium gracile LINDL.	15	ca. 30	„ „
„ *acutangulum* ENGL.	ca. 15	ca. 30	„ „
Section VIII. Xialophyllium SCHOTT			
Anthurium Tuerckheimii ENGL.		ca. 30	„
Section IX. Polyneurium ENGL.			
Anthurium Wallisii MAST.		ca. 60	„ „
Section X. Urospadix ENGL.			
Anthurium comtum SCHOTT	15	ca. 30	„ „
„ *littorale* ENGL.	15	ca. 30	„ „
„ *Beyrichianum* ENGL.	ca. 15		„ „

ARACEAE (continued)	n	2n	
ANTHURIUM (continued)			
Anthurium Olfersianum KUNTH.	ca. 15	ca. 30	GAISER, 1927.
Section XI. Episeiostenium SCHOTT.			
Anthurium Bakeri HOOK. . .		ca. 30	GAISER, 1927.
„ *Dominicense* SCHOTT.	ca. 15	ca. 30	„ „
„ *Guildingii* SCHOTT.	ca. 15	ca. 30	„ „
Section XIII. Cardiolonchium SCHOTT			
Anthurium magnificum LIND. .	ca. 15	ca. 30	GAISER, 1927.
„ *magnificum*. . . .	16	30–32	HAASE-BESSELL, 1928
„ *crystallinum* LIND.	ca. 15	ca. 30	GAISER, 1927.
„ *Warocqueanum* J. MOORE		ca. 30	„ „
Section XIV. Chamaerepium SCHOTT.			
Anthurium radicans C. KOCH .		± 50	GAISER, 1927.
Section XV. Calomystrium SCHOTT.			
Anthurium nymphaeifolium C. KOCK et BOUCHE.		ca. 30	GAISER, 1927.
„ *Veitchii* MAST. . .	15	ca. 30	„ „
Section XVI. Belolonchium SCHOTT emend ENGL.			
Anthurium Andreanum LIND. .	ca. 15	ca. 30	GAISER, 1927.
„ *Andraeanum* [1]) . .	16	30–32	HAASE-BESSELL, 1928.
Anthurium denudatum ENGL.	ca. 15	ca. 30	GAISER, 1927.
Section XVII. Semaeophyllium SCHOTT			
Anthurium subsignatum SCHOTT		ca. 30	GAISER, 1927.
Section XVIII. Schizoplacium SCHOTT			
Anthurium pedato-radiatum SCHOTT	ca. 15	ca. 30	GAISER, 1927.
„ *digitatum* (JACQ.) G. DON.			
„ *undatum* SCHOTT. .		ca. 30	„ „
„ *variabile* KUNTH. .	15	ca. 30	„ „
Hybrids:			
Anthurium Chelseiense N. E. BROWN	ca. 15	ca. 30	„ „

[1]) The *Andreanum* type used was probably a hybrid with *A. nymphearum* (HAASE-BESSELL, 1928).

ARACEAE (continued)	n	2n	
ANTHURIUM (continued)			
Hybrids (continued)			
Anthurium ferrierense BERGMAN		ca. 30	GAISER, 1927.
„ *Froebelii* HORT. . .	ca. 15	ca. 30	„ „
„ „*gloriosum*" from Mr. FISHER) . .	ca. 15		
„ *roseum* HORT (probably *A. Andreanum roseum*) . .		ca. 30	„ „
Unidentified *Anthurium* seedling from Dept. of Parks (New York City)		ca. 30	„ „
Spathiphyllum Patinii	9		JÜSSEN, 1928.
Symplocarpus foetidus	8		GOW, 1907.
Aglaonema versicolor.	8		„ 1908.
Diffenbachia daraquiniana . .	8		„ „
Zantedeschia aethiopica. . . .	16		OVERTON, J. B., 1909.
Richardia africana Kth. . . .	12		MICHELL, 1916.
Pentandra undulata.	ca. 22		DUGGAR, 1900.
Xanthosoma spec.	16		GOW, 1913.
Arum maculatum		ca. 32	SCHMUCKER, 1925.
Arisaema serratum var. *Thunbergii* f. BLUMEI		26	(YAMAKAWA, 1916) given by ISHIKAWA, 1916.
Arisaema triphyllum	16		ATKINSON, 1899.
FARINOSAE			
XYRIDACEAE			
Xyris indica L.	16		WEINZIEHER, 1914.
COMMELINACEAE			
Tradescantia fluminensis . . .	12(?)		TISCHLER, 1921–22.
„ *subaspera* (= *T. virginica*) . . .	10–12		STRASBURGER, 1882.
	12		„ 1888
„ *virginica*	12		STRASBURGER, 1904*b*; MIYAKE, 1905; BELLING, 1927*a*; SHADOWSKY, 1927.
	12–16	23–26	FARMER & SHOVE, 1905.
	12, $11+1_1$		NAWASCHIN, S., 1911.
		24	BELLING, 1927*d*.
Rhoeo discolor HANCE	4–8		GALLAGHER, 1908.
„ *discolor*	6		SÜSSENGUTH, 1920; TISCHLER, 1921–22.

COMMELINACEAE (continued)			
Rhoeo (continued)			
	6	12	SUSSENGUTH, 1921.
		12	BELLING, 1926, 1927*d*.
	12_{I}		„ given by DAVENPORT 1927.
Zebrina pendula SCHNIZ. . . .	12–15		HANCE, 1915.
PONTEDERIACEAE			
Pontederia cordata	8	15–16	SMITH, R. W. 1898.
Eichornia crassipes	16	ca. 30	„ „ „ „
„ *speciosa* KUNTH (= *E. crassipes*) . . .		ca. 32	TAYLOR, 1925*c*.
PHILYDRACEAE			
Philydrum lanuginosum . . .	8		(WINKLER 1921) given by TISCHLER, 1921–22).

LILIIFLORAE

JUNCACEAE			
Oxychloe andina	eca. 8		BRENNER, 1922.
Juncus bufonius [1])	8–10		„ „
„ *compressus* [1])	8–10		„ „
„ *filiformis* [1])	8–10		„ „
„ *lamprocarpus* [1])	8–10		„ „
„ *squarrosus*	8–10		„ „
Luzula campestris [2])	9		„ „
„ *multiflora*	9		„ „
„ *nivea*	9		„ „
MELANTHACEAE			
Veratrum album	16		STENAR, 1928.
LILIACEAE			
Tofieldia calyculata (L.) WAHLENB	12		SEELIEB, 1924.
Heloniopsis breviscapa		34	(MIYAJI, 1916) given by ISHIKAWA, 1916.
	17 [3])		ONO, 1926*b*.
Tricyrtis formosana		26	NAWA, 1928.
„ *hirta*.	6		IKEDA, 1902.
	12–13		ISHIKAWA, 1916.
	13	26	NAWA, 1928.
„ *hirta* HOOK.	6		IKEDA, 1902.
„ *macropoda*		26	NAWA, 1928.
„ *stolonifera*		26	„ „

1) The chromosome numbers of these species were not definitely determined.
2) 12 and 14 chromosomes were frequently observed.
3) 51 chromosomes were counted also in nuclear divisions in the endosperm (ONO, 1926*b*).

LILIACEAE (continued)	n	2n	
Tricyrtus (continued)			
Tricyrtus hirta × *formosana* .	7–8		NAWA, 1928.
„ *hirta* × *stolonifera* , .	7–8		„ „
Colchicum autumnale L. . . .	(10)–12		HEIMANN-WINAWER, 1919.
Asphodelus albus	13 [1])		SUSSENGUTH, 1921.
Asphodeline lutea		14	„ 1920.
Paradisea Liliastrum.	16		STENAR, 1928.
Bulbine annua WILLD.		26	MÜLLER, C. 1912.
Anthericum roseum	16		STENAR, 1928.
Chlorophytum Sternbergianum .	12		STRASBURGER, 1888.
	6		SUSSENGUTH, 1920
Hosta ovata	> 16		SYKES, 1908*a*.
		probably 48	„ 1908*b*
„ *coerulea* (= *Funkia ovata*)	12		BRLLING, 1927*c*.
Funkia Sieboldiana	> 16		SYKES, 1908*a*.
		probably 48	„ 1908*b*.
	24		MIYAKE, 1905.
Hosta Sieboldiana LODD. . . .	24		STRASBURGER, 1882, 1900; INARIYAMA, 1928.
Funkia (*Hosta*) *Sieboldiana* HOOK..	24		STRASBURGER, 1905*b*.
Hemerocallis citrina		24	TIMM, 1928.
„ *fulva* L.	ca. 12		STRASBURGER, 1882.
	16		TISCHLER, 1915.
	18		JUEL, 1897.
	24		SCHÜRHOFF, 1926.
„ *fulva*	$\frac{33}{2}$		BELLING, 1925*c*.
	12 [2])		TIMM, 1928.
Kniphofia aloides	6		BELLING, 1928*c*.
„ (*Tritoma*) *Pfitzeri* . HORT.	6		DE VILMORIN & SIMONET, 1927*b*
Aloe abyssinica	7	14	FERGUSON, N., 1926.
„ *arborescens* MILL.	7		TAYLOR, 1925*b*.
„ *arborescens*		14	FERGUSON, N., 1926.
„ *arborescens Natalensis* . .	7	14	„ „ „
„ *Cameronii*	7		„ „ „
„ *ciliaris*		> 45	„ „ „

[1]) Judged by Figure 21, page 324, SUSSENGUTH, 1921.
[2]) Irregular division gave rise to many small supernumerary nuclei.

LILIACEAE (continued)	n	2n	
Aloe (continued)			
Aloe cristata	7		FERGUSON, N., 1926.
„ *grandis*	7		„ „ „
„ *Hamburyana* NAUD. (*A. striata* HAW.)		14	MÜLLER, C., 1912.
„ *pluridens*	7	14	FERGUSON, N., 1926.
„ *purpurascens*	7 [1]		BELLING, 1928*c*.
Gasteria apricoides		ca. 14	FERGUSON, N., 1926.
„ *cheilophylla* BAKER	7	14	TAYLOR, 1924.
„ *cheilophylla*	7		FERGUSON, N., 1926.
„ *Cooperi*	7		„ „ „
„ *croucheri spathulata*	7		„ „ „
„ *excelsa*	7		„ „ „
„ *excelsa*	7		„ „ „
„ *Holtzei*	7		„ „ „
„ *lingua*	7		„ „ „
„ *lingua* var. *conspurcata*	7		„ „ „
„ *nigricans platyphylla*	7		„ „ „
„ *nigricans crassifolia*		28	„ „ „
„ *retata*	7		„ „ „
„ *rotata*	7	14	„ „ „
Apicra aspera	7		„ „ „
„ *deltoidea*	7	14	„ „ „
„ *pentagona spiralis*	14		„ „ „
Haworthia Cooperi	7		„ „ „
„ *cymbiformis* HAW. var. *obtusa* BAKER.	7	14	TAYLOR, 1925*b*.
„ *cymbiformis*	7		FERGUSON, N , 1926.
„ *glabrata*	7		„ „ „
„ *glabra pervivida*	7		„ „ „
„ *hybrida*	7		„ „ „
„ *laevis*	7		„ „ „
„ *pseudotortuosa*	14		„ „ „
„ *radula*	7		„ „ „
„ *recurva*	7		„ „ „
„ *rigida*		14	„ „ „
„ *subfasciata*		28(?)	„ „ „
„ *tesselata* (WM. HORTON) 2 bars		14	„ „ „
„ *tesselata* (WM. HORTON) 4 bars		28	„ „ „
„ *tesselata* KEW		28	„ „ „
„ *tesselata parva* KEW.	14		„ „ „

[1]) From Fig. 2, page 339 (BELLING, 1928*c*).

LILIACEAE (continued)	n	2n	
Agapanthus umbellatus	15		BELLING, 1928*c*.
Gagea lutea	36 [1])		SAKAMURA & STOW, 1926—7.
„ *lutea* KER.		16	STENAR, 1927*b*.
Allium ascalonicum	8		HIRATA & AKIHAMA, 1927.
„ *baicalense*	8		„ „ „ „
„ *baiselense*	8		„ „ „ „
„ *Bakeri* BEGEL.		16	KATAYAMA, 1928.
„ *cepa*.		16	NĚMEC, 1898*a* [2]), 1910; LUNDEGARDH, 1910, 1912*a*; GRÉGOIRE, 1906, 1912; v. SCHUSTOW, 1913.
	8		MIYAKE, 1905, TAYLOR, 1925*a*
	8	16	REED, 1914.
	16		MODILEWSKI, 1928*a*.
		30+	MERRIMAN, 1904.
		24	BONNEVIE, 1908.
		10_4 [3])	MÜHLMANN, 1926.
„ *cepa* L.		16	SCHAFFNER, 1898; DE HORNE 1911 [4]), TAYLOR, 1926.
„ *cernuum* ROTH.	8		MOTTIER & NOTHNAGEL, 1913.
„ *fistulosum*	8		STRASBURGER, 1888; HIRATA & AKIHAMA, 1927.
„ *fistulosum* L.	8		ISHIKAWA, 1897.
„ *fistulosum* L. (NISSATO)	8		KATAYAMA, 1928.
„ *fistulosum* var. *caespitosum*	8		HIRATA & AKIHAMA, 1917.
„ *Ledibourianum*	8		HIARATA & AKIHAMA, 1927.
„ *middendorfianum* . . .	16		„ „ „ „
„ *moly*	7		MIYAKE, 1905.
„ *narcissiflorum*	8		HIRATA & AKIHAMA, 1927.
„ *nipponicum* FRANCH. et SAV.	8		KATAYAMA, 1928.
„ *odorum* L.	8		SCHÜRHOFF, 1922; HABERLANDT, 1925.
		16	HABERLANDT, 1922 [5]), 1923.
	8	16	KATAYAMA, 1928.

[1]) It was possible to produce pollen grains with varying numbers of chromosomes by changing the temperature.

[2]) NEMEC (1898*a*) found 8 instead of 16 chromosomes in some older cells of the epidermis. In 1910 NEMEC reported finding syndiploid nuclei in tips from wounded roots.

[3]) These tetrads (10) appeared after treatment with pilocarpin solution.

[4]) DE HORNE (1911) considered 8 to be the diploid number, though he saw 16 chromosomes.

[5]) HABERLANDT (1922) determined this number in the cells of the embryo.

LILIACEAE (continued)	n	2n	
Allium (continued)			
	16	ca. 32	MODILEWSKI, 1925.
	16	32	„ 1928*a* [1]).
Allium ophioscorodon G. DON. .	14–16	ca. 32	„ „
„ *sativum*	8	16	DE TOLEDA PIZA, 1928.
„ *Scorodoprasum* L. var. *viviparum* REGEL.. .		16	KATAYAMA, 1928.
„ *stellerianum*	8		HIRATA & AKIHAMA, 1927.
„ *tricoccum*	8		NOTHNAGEL, 1916.
„ *ursinum* L.	8		GUIGNARD, 1884, 1885.
„ *ursinum*	7		CHODAT, 1925*a*, 1925*b*.
„ *victoriale*.	8		MIYAKE, 1905.
„ *victorialis*	16		HIRATA & AKIHAMA, 1927.
„ sp. (?).	8		GUIGNARD, 1889.
Triteleia sp. (?)		10–12	MÜLLER, C., 1912.
Lilium auratum	12		BELLING, 1928*a*.
„ *bulbiferum*	12		STRASBURGER, 1888, 1893.
„ *canadense* L.	12		ALLEN, C., 1904, 1905*a*, *b*.
„ *candidum*	12		GUIGNARD, 1891*b*; FARMER 1895*b*; MIYAKE, 1905; BELLING, 1928*a*.
„ *candidum* L.	12		STRASBURGER, 1882; GUIGNARD, 1884; BELAJEFF, 1894.
		23 [2])	NĚMEC, 1910.
„ *chalcedonicum*	12		GUIGNARD, 1885.
„ *cordifolium*.	12		TAKAMINE, 1916.
„ *croceum*	12		STRASBURGER, 1882; GUIGNARD, 1891*b*.
longiflorum.	8, 10 & 12	16 [3]), 18, 20, 22, 24	DIXON, 1895.
	12		YAMANOUCHI, 1901; BELLING, 1926, 1927*c*, 1928*a*, *b*, *c*.
			BELLING, given by DAVENPORT 1927.
„ *martagon*	12		GUIGNARD, 1889, 1891*a*; FARMER, 1893, 1895*a*, *b*; FARMER & MOORE, 1896; SARGANT, 1896, 1897; STRASBURGER, 1908; NAWASCHIN, S., 1910; HEIMANS, 1928.

[1]) Plants from München, Brno and Kopenhagen were examined.
[2]) Syndiploid nuclei with 48 chromosomes were found in root-tips treated with chloral hydrate.
[3]) DIXON (1895) found 16 to be the most frequent number.

LILIACEAE (continued)	n	2n	
Lilium (continued)			
	8, 10		OVERTON, 1891.
	12	24	OVERTON, 1893*a*.
Lilium martagon L.	12		GUIGNARD, 1884; MIYAKE, 1905
	12	24	GUIGNARD, 1891*b*.
„ *pardalinum*	12		BELLING, 1928*b*, *c*.
„ *philadelphicum*	12		SCHAFFNER, 1897.
„ *pyrenaicum* GOUAN . .	12		NEWTON, 1926.
„ *regale*	12		BELLING, 1926, 1927*c*, 1928*a*, *c*.
„ *speciosum*	12		FARMER, 1895*b*; GREGOIRE, 1912; BELLING, 1928*a*.
„ *superbum*	12		GUIGNARD, 1885.
„ *superbum* L.	12		CHIPMAN, 1925.
„ *tenuifolium* FISCH. . .	12		NEWTON, 1926.
„ *tigrinum*	12		FARMER, 1895*b*; CHAMBERLAIN, 1897; SCHAFFNER, 1906; BELLING, 1928*a*.
Fritillaria imperialis	8		STRASBURGER, 1888.
		> 24	STRASBURGER, 1882.
		ca. 24	VAN WISSELINGH, 1899.
„ *imperialis* L. . . .		24	LENOIR, 1923; TAYLOR, 1926.
„ *meleagris*	12		GUIGNARD, 1891*b*.
„ *meleagris* L. . . .	12		BELAJEFF, 1894.
	12	24	NEWTON, 1926.
„ *persica* L.	12		STRASBURGER, 1882, 1888.
„ *pudica* SPRENG. . .	12	24 [1]	SAX, 1918.
Erythronium albidum.	12		SCHAFFNER, 1901.
„ *Americanum* . .	12		SCHAFFNER, 1901.
Lloydia serotina		24	NEWTON, 1926.
TULIPA [2])			
Section Leiostemones			
Tulipa armena BOISS.		24	NEWTON, 1926.
„ *Batalini* REGEL . .		24	„ „
„ *chrysantha* BOISS. . . .	24	48	„ „
„ *clusiana* DC.	$24+\frac{12_{I}}{2}$	ca. 60	„ „
„ *Eichleri* REGEL. . . .		24	„ „
„ *galatica* FREYN. . . .		32	„ „
„ *Greigii* REGEL.		24	„ „
„ *Kauffmanniana* REGEL	12	24	„ „
Lilium Kolpakowskiana REGEL	12	24	„ „
„ *linifolia* REGEL. . . .	12	24	„ „

[1]) This number was obtained in the first division of the fertilized egg cell.
[2]) Classification under sections is according to ENGLER and PRANTL.

LILIACEAE (continued)	n	2n	
TULIPA (continued)			
Lilium maximowiczii REGEL. .	12	24	NEWTON 1926
„ *praestans* HOOG. . . .	12	24	„
„ *sprengeri* BAKER . . .		24	„
„ *stellata* HOOKER . . .		48	„
„ *viridiflora* BAKER . . .	12	24	„
„ sp.(?) Copper Color) (hort.)		24	„
„ *sp.* (?) Duc van Thol. (hort.) [1])	12	24	„ „
„ sp. (?) Keiserkron (hort.)		36	„ „
„ sp. (?) Massenet (hort.)		36	„ „
„ sp. (?) Murillo (hort.) .	12	24	„ „
Section Eriostemones			
Tulipa celsiana (= *australis*) .	12		GUIGNARD, 1900.
„ *australis* LINK.	12	24	NEWTON, 1926.
„ *biflora* PALL.		24	„ „
„ *daystemon* REGEL. . .	12	24	„ „
„ *Hageri* HELDR.	12	24	„ „
„ *humilis* HERBERT . . .	12	24	„ „
„ *orphanidea* BOISS. . .	12	24	„ „
„ *primulina* BAKER . . .	12	24	„ „
„ *pulchella* FENZL. . . .		24	„ „
„ *silvestris*	12		GUIGNARD, 1900.
„ *silvestris* L.		ca. 48	DE MOL, 1925.
	24	48	NEWTON, 1926.
„ *turkestanica* REGEL. . .		24	„ „
„ *whittalli* ELWES . . .	24	48	„ „
Section (?) [2])			
Tulipa Gesneriana	12		SCHNIEWIND-THIES, 1901.
„ *Gesneriana* L.	12		ERNST, 1901.
„ *Gesneriana* cult. hort. .		24	HEITZ, 1926.
„ *Gesneriana* var. *Breedertulip*		24	DE MOL, 1925.
„ *Gesneriana* var. *Breedertulip Goliath* . . .		ca. 36	„ „ „
„ *Gesneriana* var. *Darwin*		24	„ „ „
„ *Gesneriana* var. *La Candeur*		24	„ „ „
„ *Gesneriana* var. *La Reine* [3])		24	„ „ „

[1]) See also *Tulipa suaveolens*. According to DE MOL (1928*c*) „Duc van Thol" tulips are *T. suaveolens*.

[2]) The following species were not classified under sections.

[3]) More than 50 bud variations were unaccompanied by any change in chromosome number.

LILIACEAE (continued)	n	2n	
Tulipa (continued)			
Tulipa Gesneriana var. *Murillo* [1])		24	DE MOL, 1925, 1926*a*, 1927*c*.
		23	„ „ 1927*c*.
„ *Gesneriana* var. *Pink Beauty*		36	„ „ „ 1928*b*.
„ *Gesneriana* var. *Proserpine*		24	„ „ „
„ *Gesneriana* var. *Tournesol*		24	„ „ „
„ *Gesneriana* var. *White Duc*		24	„ „ „
„ *odoratissima* (*Duc van Thol* single)		24	„ „ 1928*c*.
„ *suaveolens* (*Duc van Thol Tulips* [2])) . . .		24	„ „ „
„ *suaveolens* (*Scarlet Duc maxima*	12, 24		„ „ „
„ *suaveolens* (*White Duc maxima*)	12, 24		„ „ „
„ *suaveolens* ROTH. var. Duc van Thol Scarlet.	12	24	„ „ 1928*d*.
	24	48	„ „ „
Albuca fastigiata (?)		54	MÜLLER, C., 1912.
CALOCHORTUS [3])			
Section Macrodenus			
Calochortus albus DOUGL. . .	10	20	NEWTON, 1926.
„ *amabilis* PURDY .	10	20	„ „
„ *Benthami* BAKER .	10	20	„ „
„ *maweanus* LEICHTL		20	„ „
Section Mariposa			
Calochortus Catalinae WATSON	7	14	„ „
„ *clavatus* S. WATS. .		16	„ „
„ *lutea* DOUGLAS . .		14	„ „
„ *Plummerae* GREENE		18	„ „
„ *venusta* BENTH var. *Eldorado*	7	14	„ „
„ *vesta* PURDY . . .	14	28	NEWTON, 1926.

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[1]) More than 40 bud variations were unaccompanied by any change in chromosome number. (DE MOL, 1926*a*).

[2]) Ten different color varieties were examined: scarlet, white, maxima, cochineal, rose, yellow, orange, variegated, violet-white, and double (reddish-brown).

[3]) Classification under sections is according to ENGLER & PRANTL. NEWTON (1926) found satellites were present throughout this genus.

LILIACEAE (continued)	n	2n	
Urginea maritima		20	HEITZ, 1926.
		40	HEITZ, 1926.
Galtonia candicans	8		SCHNIEWIND-THIES, 1901; STRASBURGER, 1904*c*, 1905*b*, 1910*a*; MIYAKE, 1905; DIGBY, 1910.
	8	16	DIGBY, 1910.
		16	GREGOIRE, 1912; SUSSENGUTH [1]), 1921;
„ *candicans* DCNE. . .		16	MÜLLER, C., 1912; NEWTON, 1924.
„ *candicans* (BAKER) DCNE.	12		STRASBURGER, 1905*b*.
„ *candicans* DES. . . .		16	KIEHN, 1917; NAWASCHIN, S., 1927.
„ *princeps* DCNE . . .		16	NEWTON, 1924.
Scilla autumnalis		24–(28)	HEITZ, 1926.
„ *bifolia* L.		20	MÜLLER, C., 1912.
„ *campanulata*	8		MCKENNEY, 1898.
		16	HEITZ, 1926.
„ *cilica*		12	HEITZ, 1926.
„ *hyacinthoides* var. *coerulea*	8		MCKENNEY, 1898.
„ *japonica* BAK.		16	SHIMOTOMAI, 1927.
„ *non scripta*	8	16	OVERTON, E., 1893*a* [2]), *b*.
Endymion nutans DUM. (= Scilla nutans)	8		GRANIER & BOULE, 1911.
Scilla nutans	8		DARLINGTON, 1926*a*.
„ *peruviana*		16	HEITZ, 1926.
„ *sibirica*	8		SCHNIEWIND-THIES, 1901.
		12	HEITZ, 1926.
Chionodoxa Luciliae BOISS. . .		18	MÜLLER, C., 1912.
Eucomis bicolor (?)		30–32(34?)	„ „ „
Ornithogalum arabicum		36–38	HEITZ, 1926.
„ *arcuatum* STEV. .		34	DELAUNAY, 1926*b*.
„ *byzantinum* . .		16–(18)	HEITZ, 1926.
„ *montanum* (= *byzantinum*?) .		16–(18)	„ „
„ *caudatum* . . .		32–(36)	„ „
„ *fimbriatum* WILLD.		12	DELAUNAY, 1926*b*.

[1]) In small plerome cells in the root-tips SUSSENGUTH (1921) often found 8 or 12 chromosomes.

[2]) *Scilla non scripta* and other species of this genus were referred to by OVERTON (1893*a*).

[3]) Division figures showing 1 and 2 extra chromosomes were als observed.

LILIACEAE (continued)	n	2n	
Ornithogatum (continued)			
Ornithogatum Hausknechtii . .		(30)–32	HEITZ, 1926.
„ *libanoticum* . .		10	„ „
„ *longibracteatum* .		52–66	„ „
„ *nanum* SIBITH et SM.		12	DELAUNAY, 1926*b*.
	6	12	„ 1926*c*
„ *narbonense* . . .		14	HEITZ, 1926.
„ *narbonense* [1]) . .	14 [2])		SPRUMONT, 1928.
„ *narbonense* L. .		16	DELAUNAY, 1926*b*.
	8	16	„ 1926*c*.
„ *nutans*		28–(32)	HEITZ, 1926.
„ *nutans* [1])	16		SPRUMONT, 1928.
„ *oligophyllum* CLARKE . . .		24	DELAUNAY, 1926*b*.
„ *pater-familias* .		24–28	HEITZ, 1926.
„ *pyramidale* . . .		ca. 32	„ „
„ *pyrenaicum* [1]) .	32 [2])		SPRUMONT, 1928.
„ *tempskyanum* FR. et SINTH. . . .		18	DELAUNAY, 1926*b*.
	9	18	„ 1926*c*.
„ *tenuifolium* GUSS.		16	„ 1926*b*.
„ *tenuifolium* TAUSCH. . . .		16	„ 1926*c*.
„ *umbellatum* . .		24–28	HEITZ, 1926.
„ *umbellatum* [1]) . .	27		SPRUMONT, 1928.
	45		„ „
Drimiopsis maculata LINDL. .	32	64 [3])	BARANOV, 1926.
Hyacinthus amethystinus . . .		24	HEITZ, 1926.
„ *orientalis*	8	16	BLAKESLEE, given by DAVENPORT, 1925.
	8		BELLING, 1925*a*, 1927*a*, 1927*b*; DARLINGTON, 1926*a*.
„ *orientalis* L. . . .	8		NĚMEC, 1898*b*; HYDE, 1909.
		16	DARLINGTON, 1926*b*.
„ *orientalis* var. *albion*		16	DE MOL, 1926*c*.

[1]) Satellites were present in this species.
[2]) Diploid and tetraploid forms with twice the number of chromosomes and twice the number of satellites were found in these species.
[3]) Four large satellites were found associated with four long chromosomes and twelve to sixteen small satellites seemed to be associated with short chromosomes in root-tip cells. Only in the early stages of pollen-mother-cell division could four large satellites and a number of small ones be seen, and they were associated with the nucleolus.

LILIACEAE (continued)	n	2n	
Hyacinthus (continued)			
Hyacinthus orientalis var. *albulus*		16	CARRUTHERS, 1921
„ *orientalis* L. (f. *albulus* JORD. pr. sp. (Roamine blanch hort.)		16	MÜLLER, C., 1912.
„ *orientalis Romaine blanche*		16	DE MOL, 1928*c*; HEITZ, 1926.
„ *orientalis* var. *Baron von Tuyll*		16	„ „ 1921*a*, *b*, 1923*a*, 1928*c*.
orientalis var. *Bouquet Royal*		16	„ „ 1928*c*
„ *orientalis* var *Cardinal Manning*		16	„ „ „
„ *orientalis* var. *Cardinal Wiseman*		27	„ „ 1921*a*, 1923*a*, 1928*c*
„ *orientalis* var. *City of Haarlem*		23	„ „ 1921*a*, *b*, 1923*a*, 1928*c*.
„ *orientalis* var. *Codro*		24	„ „ 1928*c*
„ *orientalis* var *Daylight*		16	„ „ 1928*b*.
orientalis var. *Dr. Lieber*		27	„ „ „
orientalis var. *Flevo*		16	„ „ 1928*c*.
„ *orientalis* var *Flora*		16	„ „ „
„ *orientalis* var. *Garibaldi*		16	„ „ 1923*a*, 1928*b*, *c*.
„ *orientalis* var *Garrick*		28	„ „ 1921*a*, 1923*a*, 1928*c*.
„ *orientalis* var. *General de Wet*		24	„ „ 1921*a*, 1923*a*, 1928*c*.
„ *orientalis* var. *General Pélissier*		16	„ „ 1921*a*, *b*, 1923*a*, 1928*c*.
„ *orientalis* var. *Gertrude*		16	„ „ 1921*a*, *b*, 1923*a*, 1925, 1926*b*, 1928*b*, *c*; BELLING, 1925*b*
„ *orientalis* var. *Gigantea*		24	DE MOL, 1921*a*, 1923*a*, 1928*c*.
„ *orientalis* var. *Grand Maitre*		24	„ „ 1921*a*, 1923*a*, *b*, 1925,

LILIACEAE (continued)	n	2n	
Hyacinthus (continued)			1926*a* [1]), 1927*a*, *c*, 1928*b*, *c*; DARLINGTON, 1926*b*.
		23	DE MOL, 1927*c*.
Hyacinthus orientalis var. *Grand Maitre giganteus*		24	DE MOL, 1921*a*, 1923*a*, 1928*c*.
„ *orientalis* var. *Hofdijk*		16	„ „ 1928*c*.
„ *orientalis* var. *Homerus*		16	„ „ 1921*a*, *b*, 1923*a*, 1928*c*.
„ *orientalis* (Italian variety from Castello)		16	„ „ 1928*c*.
„ *orientalis* var. *King of the Blues* . . .		24	„ „ 1921*a*, *b*, *c*, 1923*a*, 1926*a*, 1927*b*, 1928*c*; DARLINGTON, 1926*b*.
	8_3		BELLING, 1925*b*, *d*.
„ *orientalis* var. *King of the Blues dwarf* #1 [2])	24_2		„ 1925.
		18	DE MOL, 1921*c*, 1923*a*, 1926*a*, 1927*b*.
„ *orientalis* var. *King of the Blues* dwarf #2 [2])		21	DE MOL, 1921*c*, 1923*a*, 1926*a*, 1927*b*.
„ *orientalis* var. *King of the Yellows* . .		16	DE MOL, 1928*b*, *c*.
„ *orientalis* var. *La Grandesse*		28	„ „ 1921*a*, 1923*a*, 1928*c*.
„ *orientalis* var *La Peyrouse* . . .		25–26 [3])	DARLINGTON, 1926*b*
„ *orientalis* var. *Lady Derby*		24	DE MOL, 1921*a*, *b*, 1923*a*, 1927*a*, 1928*c*.
	12		BELLING, 1924
	8_3		„ 1925*d*.

[1]) Though DE MOL (1926*a*) examined 5 different types of somatic variation (flower coloration) none was found to show a different chromosome number.

[2]) These dwarf types originated from King of the Blues and are distinguished from it by their red violet flower color as well as their dwarf-like habit.

[3]) This species usually had one long chromosome more than the normal triploid (2n = 24), but division figures also showed 2 extra long chromosomes, so 2n = 25, 26.

LILIACEAE (continued)	n	2n	
Hyacinthus (continued)			
Hyacinthus orientalis var. *L'Innocence*		27	DE MOL, 1921*a*, 1923*a*, *b*, 1928*b*, *c*.
„ *orientalis* var. *L'Unique*		16	DE MOL, 1928*c*.
„ *orientalis* var. *Linnaeus*		16	„ „ 1923*a*.
„ *orientalis* var. *Lord Balfour*		24	„ „ 1923*a*, 1928*c*.
„ *orientalis* var *Marchioness of Lorne* .		16	„ „ 1921*a*, *b*, 1923*a*, *b*, 1925*b*, 1928*b*, *c*; BELLING, 1925*b*.
	8	16	DE MOL, 1928*b*.
„ *orientalis* var. *Moreno*		24 [1]	DARLINGTON, 1926*b*; DE MOL, 1927*a*.
„ *orientalis* var. *Nimrod*		19	DE MOL, 1921*a*, *b*, 1923*a*, 1928*c*.
„ *orientalis* var *Queen of the Pinks*		24	DE MOL, 1921*a*, *b*, *c*, 1926*a*, 1928*c*; DARLINGTON, 1926*b*.
„ *orientalis* var. *Red Star*		16	DE MOL, 1928*c*.
„ *orientalis* var. *Roi des Belges*		16	„ „ 1928*b*, *c*.
„ *orientalis* var. *Sir Wm. Mansfield* .		16	„ „ 1928*c*.
„ *orientalis* var. *Spring Glory* . .		16	„ „ „
„ *orientalis* var. *Totilla*		30	DE MOL, 1921*a*, 1923*a*, 1927*a*, 1928*c*.
„ *orientalis* var. *Totula*		30, 31 [2]	DARLINGTON, 1926*b*.
„ *orientalis* var. *Uncle Tom*		16	DE MOL, 1927*a*, 1928*c*.
„ *orientalis* var. *Van Speyk* (Leo XIII)		21	„ „ 1921*a*, *b*, 1928*c*.

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[1]) DARLINGTON (1926*b*) considers this to be a triploid, though in one division an extra chromosome was present.
[2]) In some cases the tetraploid number was exceeded.

LILIACEAE (continued)	n	2n	
Hyacinthus (continued)			
Hyacinthus orientalis var. *Yellow Hammer* . .		16	DE MOL, 1921*a*, *b*, 1926*b*, 1928*b*, *c*.
	8		DAVENPORT, 1923; DE MOL, 1923*b*; BELLING, 1924, 1925*d* 1927*e*.
	8	16	DE MOL, 1928*a*.
„ *orientalis* (*Flora* × *Romaine blanche*)		16	„ „ 1921*a*, 1928*c*.
„ *orientalis* (*Gertrude* × *Yellow Hammer*)		24, 36	„ „ „
		16	„ „ 1926*b*.
„ *orientalis* (*L'Innocence* × *Romaine blanche*)		22	„ „ 1921*a* 1928*c*.
„ *orientalis* (*Romaine blanche* × *Flora* .		16	„ „ „ „
„ *orientalis* (*Romaine blanche* × *Baron von Tuyll*) . . .		16	„ „ „ „
„ *romanus* DESF. (= *Bellevalla Romanus*)	4		„ „ 1921*a*; BLAKESLEE, given by DAVENPORT, 1925.
Bellevalia acutifolia (BOISS.) .		8	DELAUNAY, 1922—3.
„ *acutifolia* (BOISSIER sub *Muscari*) M. .		8 [1]), 16 [2])	„ 1926*b*.
„ *acutifolia* (BOISS.) DELN.	4		„ 1926*c*.
„ *ciliata* NEES.		8	„ 1926*b*.
„ *Fominii* G. WOR. . .		8	„ „
	4		„ 1926*c*.
„ *forniculata* (FOMIN.).		8	„ 1922—3.
„ *forniculata* (FOM. sub *Muscari*) M. . .		8	„ 1926*b*
„ *forniculata* (Fom) DELN	4		„ 1926*c*.
„ *Romana*	4		DARLINGTON, 1926*b*.
„ *romana* RCHNB. . .		8	DELAUNAY, 1926*b*.
„ *speciosa* G. WOR. . .		8	„ „
	4		„ 1926*c*.

[1]) In all the cells of one plant the 8 chromosomes were present, but one „S" chromosome lacked the small „Schenkel".
[2]) Found in root-tip cells of one plant.

LILIACEAE (continued)	n	2n	
Bellevalia (continued)			
Bellevalia Webbiana (*Hyacinthus Webbianus*) . .		8	DE MOL, 1921*a*.
„ *Wilhelmsii* (STEV.)G. WOR.		8	DELAUNAY, 1922—3.
	4		„ 1926*c*.
„ *Wilhelmsii* G. WOR.		8	„ 1926*b*.
„ *zygomorpha* G. WOR.		8	„ „
	4		„ 1926*c*.
MUSCARI MILL [1]).			
Section *Leopoldia* PARLAT.			
Muscari caucasicum BAKER . .		18	DELAUNAY, 1922—3, 1926*b*.
	9		„ 1926*c*.
„ *comosum* MILL [2]). . .		18	„ 1915, 1926*b*.
„ *longipes* BOISS. . . .		18	„ 1922—3, 1926*b*.
	9 [3])		„ 1826*c*.
„ *monstrosum* MILL. [2]) .		18	„ 1915, 1922—3, 1926*b*.
	9		„ 1926*c*.
„ *tenuiflorum* TAUSCH. .		18	„ 1915, 1922—3.
		18, 20 [4])	„ 1926*b*.
	9 [5])		„ 1926*a*, 1926*c*.
Section Botryanthus BAKER [6])			
Muscari argaei HORT. [7]) . . .		18	DELAUNAY, 1915, 1926*b*.
„ *botryoides* MILL. . . .		36–38	MÜLLER, C., 1912.
		36	DELAUNAY, 1915, 1926*b*.
„ *commutatum* GUSS. .		ca. 44	„ 1915.
		45	„ 1926*b*.
„ *latifolium* F. KIRK . .		18, 36	„ 1915.
		18, 19[8]), 20[9]), 36[8])	„ 1926*b*.
„ *neglectum*	24		STRASBURGER, 1888.
„ *neglectum* GUSS. . . .		ca. 44	DELAUNAY, 1915.
		45	„ 1926*b*.
„ *pallens* M.B.		36	„ 1926*b*.
„ *polyanthum* BOISS [7]) .		18	„ 1915, 1926*b*.

[1]) Sections in ENGLER & PRANTL are II Botryanthus KNUTH & III Leopoldia PARLAT.

[2]) This species showed satellites.

[3]) In Fig.1, one long chromosome showed one satellite attached. (DELAUNAY,1926*a*)

[4]) In two individuals, 2 extra (d) chromosomes were found.

[5]) In Fig. 1 one long chromosome shows 2 satellites attacked (DELAUNAY, 1926*a*).

[6]) DELAUNAY (1926*b*) is uncertain about the correctness of placing the species here included, other than *M. latifolium* and *M. pallens*, in this section.

[7]) This species showed satellites.

[8]) Found in one individual.

[9]) Found in two individuals.

LILIACEAE (continued)	n	2n	
Muscari racemosum MILL. . .		ca. 44	DELAUNAY, 1915.
		45	„ 1926*b*.
Veltheimia sp. (?)		20	MÜLLER, C., 1912.
Lachenalia sp. (?)		18–20	„ „ 1912.
Yucca aloifolia L.		54–56	„ „ 1910.
„ *draconis* TOIR.		54–56	„ „ „
„ *glauca* NUTTALL. . . . (= *Y. angustifolia*) PURSH.)	6		FOLSON, 1916.
„ *gloriosa*	10+ [1])		BONNET, 1912.
„ *guatemalensis* BAVK. (= *Y. Roezlii* hort). . . .		54–56	MÜLLER, C., 1910.
„ *recurva* SALISB.	25–27		WOYCICKI, 1911.
		54	„ 1925.
„ sp. (?)		44–46	MÜLLER, C., 1912.
Dasylirion acotrichum ZUCC. .		20–24	WENT & BLAAUW, 1905.
Sansevieria cylindrica		102–104	HEITZ, 1926.
Clintonia borealis	ca. 12	ca. 20	SMITH, R. W., 1911.
Smilicina racemosa	24		MACALLISTER, 1913.
„ *racemosa* (L.) DESF. .	20–24		WOOLERY, 1915.
„ *stellata* (L.) DESF. .	12	24	MACALLISTER, 1909
Maianthemum bifolium . . .	14		LAWSON, 1913.
Disporum Hookeri NICHOLS. .	5		„ 1912.
Salomonia biflora (WATT.) BRITON	7–8		CARDIFF, 1906.
Polygonatum multiflorum ALL.	12		VON BÖNICKE, 1911.
Convallaria majalis	16		STRASBURGER, 1888
„ *majalis* L.	18		WIEGAND, 1899.
	18	ca. 36	„ 1900.
	16		SAUER, 1909.
Rhodea japonica ROTH et KUNTH.	14		TAKAMINE, 1916.
Aspidistra (*Plectogyne*)		8	MÜLLER, C., 1912.
„ spec..		ca. 32	HEITZ, 1926.
Medeola virginiana	7		ISHIKAWA, 1916.
Paris quadrifolia	12		ERNST, 1902; BOLLES, LEE, 1925.
Trillium grandiflorum	ca. 6		ATKINSON, 1899.
	6		ERNST, 1902.
		12	GRÉGOIRE, 1912.
„ *recurvatum*	6	12	COULTER & CHAMBERLAIN, 1903
„ sp. (?)			KOMURO, 1924.
Liriope graminifolia BAK. var. *communis* MAXIM.	ca. 36		SHIMOTOMAI, 1927.

[1]) There were 10 „megachromosomes" and at least 40 small chromosomes.

LILIACEAE (continued)	n	2n	
Ophiogon intermedius DON. .	56		DUDGEON, 1922.
Smilax herbacea	12		HUMPHREY, 1914.
	12–13		ELKINS, 1914
AMARYLLIDACEAE			
Haemanthus (?)		16–18	MÜLLER, C., 1912.
„ *albiflorus*		16 [1]	HEITZ, 1926.
„ *Catherinae*. . . .		16 [1]	„ „
„ *coccineus* var. *coarctatus*		(14)–16 [1]	„ „
„ *fimbriatus*		16–(18) [1]	„ „
„ *Katharinae* . . .	ca. 12		SVENSSON-STENAR, 1925.
	9 [2]	18	WOYCICKI, 1928.
„ *Katharinae* BAK. .	8 [3]		„ 1927.
„ *multiflorus* . . .		16–(18) [1]	HEITZ, 1926.
„ *pubescens* var. *hirsutus*		(14)–16 [1]	„ „
Galanthus cilicicus		24	„ „
„ *Elwesii*		24	„ „
„ *Elwesii robustus* var. *praecox*		24	„ „
„ *nivalis*	12		SVENSSON-STENAR, 1925.
		24	HEITZ, 1926.
Leucojum aestivum.		20–24	„ „
„ *autumnale*		14	„ „
„ *pulchellum*		20–24	„ „
„ *vernum*	12	24	OVERTON, E., 1893*a*.
		20	HEITZ, 1926.
Nerine curvifolia		22–(24)	„ „
„ *pusilla*		ca. 24	„ „
„ *rosea* HERB.		22	MÜLLER, C., 1912.
„ *sarniensis*		22–(24)	HEITZ, 1926.
„ *undulata*		22	„ „
Ungernia Severzovii B. FEDTSCH		24 [4]	BARANOV & PODDUBNAJA, 1925
Atamosco texana GREENE (= *Zephyranthes texana*) . . .	12		PACE, 1913.
Eucharis Amazonica	ca. 45		SVENSSON-STENAR, 1925.
Narcissus biflorus Curt. (= *N. peticus* × *N. tazetta*		24	STOMPS, 1919.

[1]) The chromosome complex for this species is considered to be: 1 Ll, 2—3 Lk, 0—1 l, 2—3 lK, 2Kk.
[2]) The chromosome complex for this species is 1 Ll, 2Lk, 1 L, 2 lk, 1 l, 2k.
[3]) The chromosomes were described as 3 mega- and 5 micro-chromosomes.
[4]) A certain number of the chromosomes were said to have satellites.

AMARYLLIDACEAE	n.	2n	
Narcissus (continued)			
Narcissus Balbocodium		42	HEITZ, E., 1926.
„ *incomparabilis* . . .		14	„ „ „
„ *multiflorus* „Ideal" .		32	„ „ „
„ *poeticus* L.		16	STOMPS, 1919.
„ *poeticus*	7	14	DE MOL 1928*a*.
„ *poeticus ornatus* . .		16	STOMPS, 1919.
„ *poeticus poetarum* .		16	„ „
„ *poeticus* var. „Albion"		16	„ „
„ *poeticus* var. „Glory of Lisse".		16 [1])	„ „
„ *Poeticus* var. *Glorie van Lisse*	7		DE MOL 1928*a*.
„ *Pseudonarcissus* . .	7	14	DE MOL 1928*a*.
„ *Pseudonarcissus* × *Narcissus poeticus* .		28	DE MOL, 1926*a*, 1927*c*.
		14	„ „ 1927*c*.
Pancratium ceylanicum . . .		90–100	HEITZ, 1926.
„ *speciosum*		ca. 90	„ „
Hippeastrum rutilum B. fulgidum		(22)–24	„ „
Lycoris radiata HERB. [2]) . . .	11_3	33	NISHIYAMA, 1928*b*
„ *sanguinea* MAXIM. . .	11	22	„ „
Agave americana L.		20	MÜLLER, C., 1912.
„ *virginica* L.	12		SCHAFFNER, 1909.
„ *virginica* (?).	12	24	MÜLLER, C., 1912.
Fourcroya altissima		ca. 50	HEITZ, 1926.
„ *Lindenii*		ca. 40	„ 1926.
Beschornea superba HORT (?) .		ca. 50	MÜLLER, C., 1912.
Alstroemeria braziliensis SPRENG. . . .	8		TAYLOR, 1926.
„ *chilensis* LOOD . .	8		STRASBURGER, 1882.
„ *pelegrina* L. . . .	8		GUIGNARD, 1884.
„ (?)	8		„ 1889; STRASBURGER 1888.
„ *psittacina*	8		GUIGNARD, 1891*b*.
„ *psittacina* (= *A. pulchella*	9		SVENSSON-STENAR, 1925.
Curculigo recurvata	ca. 10		„ „ „
Anigosanthus flavidus Red. Lil.	6		STENAR, 1927*a*.

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[1]) Occasionally 14 chromosomes were found.
[2]) This species shows very irregular meiotic divisions.

DIOSCOREACEAE			
Dioscorea caucasica LIPSKY . .	10		MEURMAN, 1925*a*, *b*.
„ *sinuata*	12		SUSSENGUTH, 1920.
	ca. 12	24	„ 1921.
„ *sinuata* VELL. . . .	17–18		MEURMAN, 1925*a*, *b*.
Tamus communis L.	24		„ 1925*a*, *b*.
IRIDACEAE			
Crocus asturicus		(22)–24	HEITZ, 1926.
„ *cancellatus*	5	10	„ „
„ *iridiflorus*		24–(26)	HEITZ, 1926.
„ *pulchellus*		12	„ „
„ *sativus* L.		24	HIMMELBAUR, 1926.
„ *Tomasianus*		ca. 18	HEITZ, 1926.
IRIS [1]).			
Section Onocylus			
Iris atropurpurea BAKER. . .		20	SIMONET, 1928*c*.
„ *Lortetii* BARBEY		20	„ „
„ *Sari* SCHOTT		20	„ „
„ *soforana* FOSTER		20	„ „
Section Pogoniris			
Iris chamaeiris BERTOL. . . .		40	SIMONET, 1928*a*.
„ cypriana FOSTER et BAKER	24	48	„ „
	24		„ „
Iris pallida	12		MIYAKE, 1905
„ *pallida* LAM.	12	24	SIMONET, 1928*a*.
	12		„ 1928*b*.
„ *pallida* var. *dalmatica* . .	12+few$_1$		LONGLEY, 1928.
„ *pumila* L. var. *coerulea* hort.		40	SIMONET, 1928*a*.
„ *variegata* L..	12	24	„ „
Section Evansia			
Iris tectorum MAXIM.		28	SIMONET, 1928*a*.
Section Apogon			
Iris acoroides SPACH.	17	34	SIMONET, 1928*a*.
„ *aurea* LINDL.	20	40	„ „
„ *desertorum*	12		GUIGNARD, 1891*b*.
„ *desertorum* HORT.	16		SIMONET, 1928*a*.
„ *foetidissima* L.		40	„ „
„ *fulva* KER-GAWL.	21	42	„ „
„ *graminea* L.	17	34	„ „
„ *Kaempferi* SIEBOLD . . .	12	24	„ „
„ *Kaempferi* var. *hortensis* MAKINO	12	24	KAZAO, 1928.

[1]) The following species are classified under sections according to DYKES (1913).

IRIDACEAE (continued)	n	2n	
Iris (continued)			
Iris Kaempferi var. *spontanea* MAKINO.	12	24	KAZAO, 1928.
„ *mandschurica*	20 ±		LONGLEY, 1928.
„ *mandshurica* hort.	17	34	SIMONET, 1928*a*
„ *musulmanica* FOMIN. . . .	22	44	„ „
„ *ochroleuca* L.	20	40	„ „
„ *orientalis* THUNB.	14	28	SIMONET, 1923*a*.
„ *pseudacorus*	12		STRASBURGER, 1900; MIYAKE, 1905; LONGLEY, 1928.
„ *pseudacorus* L.	17	34	„ „
„ *ruthenica* DRYAND		> 100	„ „
„ *sibirica* L.	14	28	„ „
„ *sibirica* var. *orientalis* MAKINO	14	28	KAZAO, 1928.
„ *spuria*	12		MIYAKE, 1905.
„ *spuria* L. var. *alba hort.* .	22	44	SIMONET, 1928*a*.
„ *unguicularis* POIR.		38	„ „
„ *versicolor* L.	ca. 56 [1])		„ „
„ *versicolor* (from Alabama)	ca. 36		LONGLEY, 1928.
„ *versicolor* (from North Caro lina)	42		„ „
„ *versicolor* (from Rosslyn, Va.)	$44 + 17_1$ [2])		„ „
„ *virginica* L.	ca. 56 [1])		SIMONET, 1928*a*.
Section Reticulata			
Iris reticulata BIEB.		20	SIMONET, 1928*a*.
Section Xiphion			
Iris filifolia HORT. var. *La France* [3])	17	34	SIMONET, 1928*a*.
„ *juncea*, POIR		32	„ 1928*c*.
„ *lusitanica* KER-GAWL . .		34	„ „
„ *tingitana* BOISS.		42	„ 1928*a*.
„ *xiphioides* EHRH.		42	„ 1928*c*.
„ *xiphium* L. [3]).		34	„ „
Section Regelia.			
Iris Hoogiana DYKES		44	SIMONET, 1928*c*.
„ *Korolkowi* REGEL		44	„ „

[1]) The diploid number was not exactly determined in this species.
[2]) Three other forms, collected in Massachusetts and Nova Scotia, also showed univalent as well as bivalent chromosomes.
[3]) *Iris filifolia* HORT. var. La France investigated by SIMONET 1928*a* was a form of *Iris xiphium praecox*.

IRIDACEAE (continued)	n	2n	
Iris (continued)			
Iris stolonifera MAXIM		44	SIMONET, 1928*c*.
„ *vaga* FOSTER		44	„ „
Section J u n o.			
Iris bucharica FOSTER		22	SIMONET, 1928*c*.
Section G y n a n d i r i s			
Iris sisyrinchium L.		24	SIMONET, 1928*a*.
Section (?) [1])			
Iris cristata	12		LONGLEY, 1928.
„ *ensata*	20		„ „
„ *flavescens* var. *baxteri*. . .	$12+\text{few}_{I}$		„ „
„ *flavescens* var. „Canary bird"	$12+\text{few}_{I}$		„ „
„ *florentina*	12		MIYAKE, 1905.
„ *florentina* L.	12		SIMONET, 1928*b*.
„ *florentina* A. GRAY. . . .	16_3[2])	48	KAZAO, 1928.
„ *germanica*	12		STRASBURGER, 1900.
„ *germanica* HORT.	12		SIMONET, 1928*b*.
„ *germanica* var. *atropurpurea*	$12+10?_{I}$		LONGLEY, 1928.
„ *germanica* HORT. var. *Calypso*		24	SIMONET, 1928*b*.
„ *germanica* var. *Kharput*. .	$12+\text{few}_{I}$		LONGLEY, 1928.
„ *germanica* var. *King Edward VII*	$12+\text{few}_{I}$		„ „
„ *germanica* HORT. var. *Lord Mayor*		24	SIMONET, 1928*b*.
„ *germanica* HORT. var. *Mme*		24	„ „
Chereau		24	„ „
„ *germanica* var. *Purple King*	$12+\text{several}_{I}$		LONGLEY, 1928.
„ *germanica* var. *Purple Prince*	$12+19?_{I}$		LONGLEY, 1928.
„ *gracilipes* L.	18	36	KAZAO, 1928.
„ *japonica* THUNB.		54	„ „
„ *laevigata* FISH. et MEY.. .	16	32	„ „
„ *lurida* SOLAND	12		SIMONET, 1928*b*.
„ *macrantha* HORT. (AMAS) .	24		„ „
„ *neglecta* HORN.	12		SIMONET, 1928*b*.
„ *plicata* LAM.	12		SIMONET, 1928*b*
„ *sambucina* L.	12		SIMONET, 1928*b*.
„ *sambucina* var. *Mephistopheles*	$12+\text{few}_{I}$		LONGLEY, 1928.

[1]) The following species were not classified under sections.
[2]) Late diakinesis of pollen mother cell division showed about 16 trivalent chromosomes.

IRIDACEAE (continued)	n	2n	
Iris (continued)			
Iris squalens	12		STRASBURGER, 1900.
„ *troiana* A. KERN.	24		SIMONET, 1928*b*.
„ *variegata* L..	12		„ „
„ *variegata* var. *Mrs. E. A.* Barr	12+few$_{I}$		LONGLEY, 1928.
„ *variegata* var. *Princess of Teck*	12+few$_{I}$		„ „
„ *variegata* var. *Samson* . .	12+few$_{I}$		„ „
„ sp. (?) varieties:			
Allies HORT.		ca. 30	SIMONET, 1928*b*.
Ambassadeur HORT.	12	48–50	„ „
Ballerine HORT.		36	„ „
Jacquesiana	12+2$_{I}$		LONGLEY, 1928.

LONGLEY (1928) for a number of Iris varieties gives the following approximate chromosome numbers:

n = 12+ few univalents:

Calypso; *Caprice*; *Count de St. Claire*; *Delicata*; *Kkedive*; *La Tendresse*; *Leonidas*; *L'esperance; Mandraliscae; Mmme Chereau; Mme, Pacquitte*; *Morphee*; *Mrs. G. Darwin*; *Mrs. H. Darwin*; *Penelope*; *Rembrandt*; *Sir Walter Scott*; *Uniquc.*

n = 12+ some univalents:

Amabilis; *Neglecta*; and *William Wallace.*

n = 12+ several univalents: *Her Majesty.*

Iris Pseudacorus × *I. versicoler*		24 [1])	SAWYER, 1925.
Hermodactylus tuberosus MILL.		20	SIMONET, 1928*a*.
Sisyrinchium striatum SM. . .	9		DE VILMORIN & SIMONET, 1927*b*
Dierama pendulum BAKER . .	10		„ „ „ „
Gladiolus primulinus hyb. var. hort *La Muerthe*	30		„ „ „ „
Freesia refracta KLATT. . . .		22	TAYLOR, 1926.

SCITAMINEAE

MUSACEAE

Musa acuminata var. *Simiarum*		22(?)	WHITE, 1928.
„ *basjoo* SIEB. et ZUCC.. .	11		D'ANGREMOND, 1914.
„ *basjoo* var. *Alisanag* . .		24	WHITE, 1928.
„ *basjoo* var. *Manang*. . .		24	„ „
„ *basjoo* var. *Martini* . .		24	„ „
„ *basjoo* (?) var. *Lidi*. . .		23	„ „
„ *basjoo* (?) var. *Rodoc Clamp*.		24	„ „
„ *Cavandishii* var. *Bungulan* (TUMOC)		32	„ „

[1]) This number of chromosomes was found arranged in pairs in the one-celled zygote.

MUSACEAE (continued)	n	2n	
Musa (continued)			
Musa Cavandishii var. *Chinese*		32	WHITE, 1928.
„ *Cavendishii* var. *Poot.* .		32	„ „
„ *Cliffortiana* var. *asperma*		24	„ „
„ *Crachycarpa* var. *Back.* #72.		24	„ „
„ *ensete* var. *Abyssinian* .		20	„ „
„ *Gilletti*		18(?)	„ „
„ *ornata chittagong*	11		D'ANGREMOND, 1914.
„ *paradisiaca* var. *Black Stemmed Gros Michel.* .		32	WHITE, 1928.
„ *paradisiaca* var. *Black Stemmed Horse Plantain*		32	„ „
„ *paradisiaca* var. *Black Stemmed Maiden Plant.*		32	„ „
„ *paradisiaca* var. *Burro Apple Plantain*		32	„ „
„ *paradisiaca* var. *Cenizo Apple Plantain*		32	„ „
„ *paradisiaca* var. *Chamaluco Apple Plantain* . .		32	„ „
„ *paradisiaca* var. *Congo* .		32	„ „
„ *paradisiaca* var. *Dwarf Horse Plant*		32	„ „
„ *paradisiaca* var. *Giant Fig*		32	„ „
„ *paradisiaca* var. *Green Red*		32	„ „
„ *paradisiaca* var. *Gros Michel* [1])		32	„ „
„ *paradisiaca* var. *Guyuran*		32	„ „
„ *paradisiaca* var. *Horse Plantain*		32	„ „
„ *paradisiaca* var. *Lacatan* [1])		32	„ „
„ *paradisiaca* var. *Maiden Plant*		32	„ „
„ *paradisiaca* var. *Martabon Dacca*		24	„ „
„ *paradisiaca* var. *Red* . .		32	„ „
„ *paradisiaca* var. *Red plantain*		32	„ „

[1]) Three varieties, from Panama, Venezuela and Gros Michel (?), of *Sierra Leon* were investigated, as were three varieties of *Lacatan* from the same countries.

MUSACEAE (continued)	n	2n	
Musa (continued)			
Musa paradisiaca var. *seminifera*		24	WHITE, 1928.
„ *paradisiaca* (?) var. F. H. B. 57246.		32	„ „
„ *rosacea*	12		TISCHLER, 1921–22.
		24	WHITE, 1928.
„ *sanguinea*		24	„ „
„ *sapientium* var. „*Appelbacove*"	11–12		D'ANGREMOND, 1914.
„ *sapientium* var. *Dole* . .	8		TISCHLER, 1910.
„ *sapientium* var. „*Gros Michel*"	16		D'ANGREMOND, 1914.
„ *sapientium* var. *Kladi* .	24		TISCHLER, 1910.
„ *sapientium* var. *Radjah Siam*	16		„ „
„ *textilis* var. *Bungulanon*		20	WHITE, 1928
„ *textilis* var. *Libuton*. . .		20	„ „
„ *textilis* var. *Maguindanas*		20	„ „
„ *textilis* var. *Puteean* . .		20	„ „
„ *textilis* var. *Sinaba* . . .		22	„ „
„ *textilis* var. *Tangongon* .		20	„ „
„ *Zebrina*.		24	„ „
„ *Zebrina* var. *cerifera* . .		24	„ „
„ sp. (?) [1])		12	„ „
„ *paradisiaca* (?) [2]) varieties:		36	„ „

Amrita Sogar; *Bangalan #1*; *Bluefield*; *Brazilian*; *Bumulan*; *Chek Tuk*; *Chevalier*; *Chuoi Cau Tay*; *Chuoi Cau Xiem*; *Chuoi Gia Cui*; *Chuoi Gia Lung*; *Coll. #106*; *Coll. #111*; *Embun*; *Kale*; *Kanara*; *Kelat*; *Klui Hom Keo*; *Laknau*; *Masak Hijau*; *Nand Aboeboe*; *Nand. Kabaker*; *Pisang Ambon Loemoet*; *Pisang Ambon Poetih*; *Pisang Mangsan*; *Pisang Masan*; *Pisang Sangate*; *Pisang Seroeanta*; *Pisang Sri*; *Pisang Sri Bali*; *Rotan*; *Sabang Castila*; *Susu*; *Tandoek Kambing*; *The Hmwe*; (*Unid*) *Ti-ma-ma type*.

Musa sp. (?) [3]) varieties			
Ambong Koerik		32	WHITE, 1928.
Baloko		32	„ „
Bastard Hemp		24	„ „
Bat Nose		32	„ „

[1]) The species though unidentified showed resemblances to *M. basjoo* and *M. seminifera*.

[2]) WHITE (1928) states that the following 36 clones having 2n = 36 were for the most part considered as varieties of *Musa paradisiaca*.

[3]) WHITE (1928) has not named the species of the following varieties.

MUSACEAE (continued)	n	2n	
Musa sp. (?) varieties (continued)			
Bayalany		20	WHITE, 1928.
Bolo		24	„ „
Butuan		32	„ „
Chek Ambong Plok		32	„ „
Chek Ambong Sneng		32	„ „
Chek Pong Man Pluc. . . .		24	„ „
Chuoi Cau Trang		24	„
Chuoi Cha		32	„ „
Chuoi Gia Huong		32	„ „
Chuoi Tien Huong		24	„ „
Coolie Hongkseng		24	„ „
Decosta White		32	„ „
Djantan		24	„ „
Dorado		28	„ „
Galimba Pula		24	„ „
Guineo Prieto		32	„ „
Inarna		22(?)	„ „
Inarnibal		24	„ „
Kacoloon		24	„ „
Kalibo		32	„ „
Kapas		32	„ „
Klui Kran		24	„ „
Lady Finger		24	„ „
Manzana		32	„ „
Martinique		32	„ „
Masak Sahari		32	„ „
Morong Datu		24	„ „
Morong Principe		32	„ „
Morado Pula		32	„ „
Morado Puti		32	„ „
#20 *Munden*		24	„ „
Nandow Kabebar (A) . . .		20	„ „
Nandow Kabebur (B) . . .		24	„ „
Nandow Mamboef Diodi . .		32	„ „
Pacol		24	„ „
Pisang Boeloei		32	„ „
Pisang Cocos		32	„ „
Pisang Galipapo		32	„ „
Pisang Kawahi (*Galela*) . .		24	„ „
Pisang Kawahi (*Tobelo*) . .		24	„ „
Pisang Pandok Beureum . .		24	„ „
Pomme Java		32	„ „
Pulutan		24	„ „
Putian		24	„ „

MUSACEAE (continued)	n	2n	
Musa sp. (?) [1]) varieties (continued)			
Raja		32	WHITE, 1928.
Sabang Tagolog		24	„ „
Serendeh		32	„ „
Sinaroksok		24	„ „
Tadiao		32	„ „
Ta Ni Pa		32	„ „
Tiparot		40	„ „
Tudoc		32	„ „
(*Unid.*) *Sanderson's*		24	„ „
(*Unid.*) *from Fr. Indo-China*		32	„ „
(*Unid.*) *from Porto Rico* . .		32	„ „
Valery		32	„ „
Viente Cohol		24	„ „
Vi-ma-ma		32	„ „
Yale Bale		24	„ „
Musa sp. (?) „Alisanay" × *M. seminifera*		24	„ „
„ sp. (?) „Apple Plaintain" × *M.* „Bastard Hemp"		28	„ „
		32	„ „
„ sp. (?) „Bastard Hemp" × *M. seminifera* . . .		24	„ „
		23	„ „
„ sp. (?) „*Martini* × *M. seminifera*		24	„ .
„ hybrid „Dunlap's Seedling"		40	„ „
ZINGIBERACEAE			
Zingiber officinale		22	SUGIURA, 1928*a*.
CANNACEAE			
Canna sp. (?)		6	GRÉGOIRE, 1912.
„ *flaccida*		18	HEITZ, 1926.
„ *glauca*	9		HONING, 1923.
„ *indica* L.	3	6	WIEGAND, 1900.
„ *indica*	8		KOERNICKE, 1903.
	9 [2])		HONING, 1923.
	9 [3])		BELLING, 1921.
	$\frac{27}{2}$ [3])		„ „

[1]) See footnote 3, page 408

[2]) HONING (1923) states that in 1915 he had found 2n = 16.

[3]) According to TISCHLER (1921—22) Kuwada had determined in 1918 and verbally reported that 18 and 27 were the diploid numbers of *Canna indica*.

CANNACEAE (continued)	n	2n	
Canna (continued)			
		18 [1])	HEITZ, 1926.
	9	18	TOKUGAWA & KUWADA [2]),1924.
		27	„ „ „ 1924.
Canna indica var. Firebird. . .	9_3		BELLING, 1925*c*.
„ *indica* var. Gladiator. .	9_3		„ „
„ *indica* var. Pennsylvania	variable, tri, bi & univalents		„ „
MARANTACEAE			
Maranta sanguinea	12		SUSSENGUTH, 1920.
„ sp.	16		VON BOENICKE, 1911.
Thalia dealbata		12	SUSSENGUTH, 1921.
MICROSPERMAE			
BURMANNIACEAE			
Thismia clandestina [3])	6–8		MEYER, K., 1909.
Burmannia candida	12		ERNST & BERNARD, 1912; SCHOCH, 1920.
„ *championii*	12		ERNST & BERNARD, 1912.
	32–36		SCHOCH, 1920.
„ *coelestis* DON. . .	30–36		ERNST & BERNARD, 1912.
„ *coelestis*	32–36		SCHOCH, 1920.
„ *disticha*	20–22		„ „
ORCHIDACEAE	n	2n	
Cypripedium barbatum . . .	16	32	STRASBURGER, 1888
„ *insigne*		24–36	HEITZ, 1926.
„ *parviflorum* . . .	11		PACE, 1907.
„ *pubescens*	11		„ „
„ *spectabile*	11		„ „
Paphiopedilum insigne	ca. 12		AFZELIUS, 1916.
	8–9		SUSSENGUTH, 1920.
Ophrys myodes JACQ.	11–12		SEMIANINOVA, 1925.
Orchis maculata	16		STRASBURGER, 1888.
	10	20	FUCHS & ZIEGENSPECK, 1924.
Himantoglossum hircinum. . .	16		STRASBURGER, 1888.
„ *hircinum* SPR.	12		HEUSSER, K., 1915.
Herminium monorchis R. BR. .	12–13	24–26	BARANOV, 1925.
Nigritella nigra	30	60	AFZELIUS, 1928.

[1]) Two garden varieties were examined.
[2]) For names of varieties investigated by TOKUGAWA & KUWADA (1924) see GAISER (1926).
[3]) ERNST & BERNARD believe thay MEYER investigated *Thismia javanica*.

ORCHIDACEAE (continued)

Epipactis falcata		24	SUGIURA, 1928*a*.
„ *palustris*.	12		FRIEMANN, 1910.
Gastroda elata	8–9	16–18	KYSANO, 1915.
Spiranthes australis	12		TAKAMINE, 1916.
Gyrostachys cernua.	30		PACE, 1914.
„ *gracilis*	15		„ „
Listera ovata	16		GUIGNARD, 1891*b*; ROSENBERG, 1905.
		34	GREGOIRE, 1912.
„ *ovata* R. BR.	16		GUIGNARD, 1884.
		32–34	MÜLLER, C., 1912.
„ sp. (?)	16		GUIGNARD, 1889.
Neottia nidus avis	16		GUIGNARD, 1884.
„ *nidus avis* RICH . . .	18		MODILEWSKI, 1918.
Calopogon pulchellus R. BR. .	ca. 13	ca. 26	PACE, 1909.
Zygopetalum Mackayi HOOK .	ca. 24		SUSSENGUTH, 1923.
Cymbidium Lowianum	9–10		„ 1920.
Oncidium praetextum RCHB. fil.	28		AFZELIUS, 1916.
Ionopsidium acaule RCHB. . .	12	24	CHIARUGI, 1928.
„ *Savanium* (CAR.) BALL	16	32	„ „
Gymnadenia conopea	(16)?		STRASBURGER, 1888.
	8		CHODAT, 1924.
	10	20	FUCHS & ZIEGENSPECK, 1924.

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